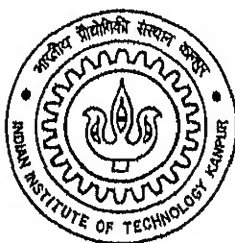


A STUDY OF PROBLEMS CONFRONTED DURING IMPLEMENTATION OF QUALITY MANAGEMENT PROGRAMMES

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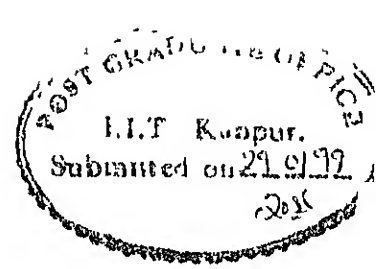
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CERTIFICATE

It is certified that the work contained in this thesis entitled '**A Study of Problems Confronted During Implementation of Quality Management Programmes**' by **Pranjal Jyoti Dutta**, has been carried out under my supervision and that this work has not been submitted elsewhere for a degree

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ABSTRACT

In the post liberalisation period, many Indian organisations have taken up Quality Management Programmes (QMPs) in order to compete with global standards. But it has been observed that organisations frequently confront problems during implementation of such programmes. At times, changes initiated for these programmes even lead to tensions within the organisation. The present study attempts to explore the problems often confronted by management during implementation of QMPs in Indian organisations.

In the first phase of this study, a secondary analysis was performed on four cases dealing with implementation of QMPs. The secondary analysis and review of literature enabled us to identify five major problems confronted by managers while implementing and managing the QMPs. The analysis of the cases provided us a deep insight of the actual practices in an organisation implementing QMPs. At the same time, literature provided the conceptual input to identify the problems of implementation as a result of organisational conflict brought about by the change programmes. The five problems identified as the major hurdles towards smooth implementation of QMPs are: centralised decision making in the enabling structure, complexity in administering quality projects, resource scarcity for implementation of the projects, lack of co-operation from middle management and difficulty in sustaining workers' involvement in the programmes.

In the second phase of the study, a valid and reliable instrument was designed to conduct an empirical investigation of problems. The empirical investigation not only attempted to explore the problems further in different organisations but also tried to find the linkages of the problems with the organisational context as well as the approach adopted by management while implementing the programmes.

Attempt has been made throughout the study to consolidate our understanding on the barriers within which the 'change agents' have to work while implementing the QMPs, which is still a neglected domain in the literature of quality.

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ABBREVIATIONS

ABB	Asea Bown Boveri
BGC	<i>Become Globally Competitive</i>
EFA	Exploratory Factor Analysis
K W	Kruskal Wallis
QA	Quality Assurance
QM	Quality Management
QMP	<i>Quality Management Programme</i>
SGA	Small Group Activity
SPC	Statistical Process Control
TQM	Total Quality Management

INTRODUCTION

1.1 In Search of Quality

In a competitive market, companies always search for a sustainable source of competitive advantage. In the 1980s, when U S and European companies lost the market to their Japanese counterparts, they realised that their only way of surviving in the business was to pay much greater attention to quality. This quality is not confined to the quality of a product or service. It applies to delivery, administration, customer service and every aspect of company activities. It encompasses all the ways in which the company meets the needs and expectation of its financial stake holders, its customers and community in which it operates. Realising this emerging requirement of quality for competitive advantage, companies in the U S and Europe adopted strategic approach towards quality. The impact that quality movement has made on American management practices is both more influential and pervasive than any other fad or innovation that emerged during the last two decades. It is both fundamental as well as evangelic in the sense that it redirects an organisation's overall goals and profoundly influences the work practices of individual employees. At the same time, its success within organisations critically depends upon the ability of the proponents to generate consensus and momentum through making converts [Krishnan et al , 1993]

Quality Management Programmes (QMPs) were started in a serious way by the high profile American firms - such as Ford, Xerox, Motorola - after loosing the market to more efficient and high quality Japanese producers. The effectiveness of the programmes were demonstrated by the remarkable business turnaround that these companies have achieved. In all these companies QMPs were highly successful, not just in improving product or service quality, but also in improving competitive and financial performance, enriching the jobs of the employees and transforming corporate culture.

Today Indian corporate is in the same situation as U S industry was when Japanese invaded their markets in mid 1970s. The market environment is fast changing, with liberalisation in economy resulting in an open and competitive market. Till the days of closed economy and start of the era of deregulation, average Indian companies were taking the customer for granted and remained ignorant of the altered situation in the mistaken belief that the quality control is a cost enhancing, production hampering nuisance fetching no bonuses in the domestic market. Now in an open market, the customer has a choice and is demanding his penny's worth of quality. The challenge faced in industry today is to acquire a competitive edge by manufacturing product of high quality at low cost, which is not an easy task. The logical path to accomplish this objective is successful implementation of quality improvement programmes in all areas of work, involving all employees and eliminating all types of waste on a continuous basis [Anand, 1996]

What Japanese industry did in 1950s and 1960s after the World War II wrecked the entire industrial set up of the country and what the American companies did in the 1980s to face the battle with their Japanese counterparts in the market do provide the Indian companies a guidance to gear up to face the challenges ahead.

Most of the Indian companies are trying to implement some sort of quality improvement programme as last resort to defend itself from the tidal onslaught of global quality and some of them are showing considerable achievements. Today, quality is becoming a catchword in corporate India.

1.2 Rationale of the Study

The literature in the field of quality is highly normative and rather practitioner-oriented. The reporting by press, government agencies, and academic research of QMP results are sometimes strongly biased. While benefits of quality management initiatives have been highly publicised, and the achievements of exemplary companies much lauded, there is also a darker side to the 'quality revolution'. Many companies that have embarked upon the programmes inspired by the quality gurus like Deming, Juran,

Crosby, have given up during the early stages of implementation [Krishnan et al , 1993]

A McKinsey study in Europe and United States found that two thirds of all quality improvement programmes fail to show the expected results. The Economist reports that of those programmes that have been in place in western firms for more than two years, two third simply grounded to halt because of their failure to produce hope for results. The failure of QMPs in various companies show that there are serious loopholes in the whole implementation process which are yet to be explored properly. When such instances of failure are abound, the novelty of the whole exercise begins to wear off and people begin to loose interest [Business Today, 1998]

The literature is yet to develop a theoretical and empirical base to understand the implementation of QMPs and the problems often encountered during the process of implementation [Ahire, 1995, Krishnan, 1993]. The effort to understand the hurdles faced during the implementation of QMPs has began only recently. Researches conducted in this direction are highly specific to western world and handful in numbers. Indian organisations have a different kind of structure, with different type of people and are in a different kind of environment. So studies conducted exclusively in Indian companies implementing QMPs can give better understanding of the problems faced by them while going to implement the programmes. Some researchers (Vrat et al , 1998, Anand, 1995, Jha, 1998) though attempted to address some problems associated with QMPs in a Indian context, a comprehensive understanding of the problems still needs further exploration in this direction. This study is an attempt towards this objective. The research endeavours to explore the problems often faced by managers involved in the implementation of QMPs in Indian organisations and their linkages with the organisation context as well as the approach of the management towards the implementation process.

1.3 The Research Objectives

The broad objectives of the research are as follows

- To identify the problems encountered by managers in implementing and managing the QMPs in Indian organisations
- To develop a tool for empirical investigation of the problems
- To understand the linkages of the problems with organisational context as well as the approach adopted by management towards the implementation process

1.4 The Plan of the Thesis

The first chapter of the thesis has discussed the rationale of the study, research objectives and plan of the thesis. The second chapter reviews the relevant literature compiled from diverse sources. The third chapter performs a brief secondary analysis of some previous case studies that have provided the focus to the study. The fourth chapter builds the research framework for empirical investigation and discusses the methodology adopted for empirical investigation. The fifth chapter presents the analysis of data collected from various organisations in India. The final chapter presents the research findings, its limitation and scope for further research work.

LITERATURE REVIEW

2.1 Introduction

There is a long history of evolution of Quality Management Programmes (QMPs) starting from the effort to rebuild Japanese industry after World War II. QMPs have seen a number of changes over the last two decades. During the 1970s, the quality focus was on effective sampling techniques for identifying and eliminating defective products. In the 1980s, the emphasis switched to statistical process control (SPC) and to finding the defects at the source rather than picking them up later on, that led to the philosophy of 'doing it right the first time'. Statistical controls continue to play a major role in all quality initiatives. But later on, SPC has been replaced by customer consideration. In fact, the quality movement has moved out from using a few statistical charts to looking for what customer really wants [Lee, Luthans & Hodgetts, 1996]

All QMPs have basically grown around the ideas of Gurus like Deming, Juran and Crosby with major contributions from Feigenbaum, Taguchi, and Ishikawa. Edward Deming provided the techniques and rationale. Phil Crosby taught the concept of computing cost of bad quality and promoted the concept of zero defect as the only valid target. Armand Feigenbaum and Kaoru Ishikawa wrote about Total Quality Control. Joseph Juran offered the concept of Total Quality Management, which calls for project-by-project continual improvement [Schonberger, 1997]

Any company today seeking to embark upon a programme of quality improvement faces a variety of programmes, standards and approaches. The leading American companies that demonstrated considerable achievement through QMPs have christened their programmes under different names - like Motorola's "Six - Sigma" programme, Ford's "Total Quality Excellence" programme or Hewlett-Packard's "Quest for Total Quality". The ISO 9000 specifications of the International Standards Organisation of Geneva, Vendor rating certification such as GM's "Mark of Excellence" and even the innovations in the field of manufacturing and production like "just in time" or

“concurrent engineering” are all included under one banner of ‘Quality’ [Krishnan, 1993] Although the specific approaches of the companies to achieve ‘competitive edge through quality’ varies and different organisations embrace different programmes as a part of their QMPs, all these programmes share some common components - continuous process improvement, people orientation, use statistical techniques to solve problems and above all customer focus - that builds the philosophy called Total Quality Management [Beistle, 1993]

2.2 Total Quality Management - A Brief Overview

Total Quality Management (TQM) means many things to many people. Unfortunately it has come to be associated more often with statistical methods, such as statistical process control and design of experiments, than with a method of management.

In its true sense TQM is a means of operating business that seeks to maximise a firm's value through maximising customer satisfaction at the lowest possible cost. Maximising customer satisfaction at the lowest possible cost is achieved by continuously improving all processes within a company and empowering employees [Spitzer, 1993]

TQM not only involves customer satisfaction, continuous improvement and empowering employees, it also involves education and training of employees, cultural change and strategic processes. So TQM can also be defined as an organisational strategy and accompanying techniques that result in the delivery of high quality products and/or services to customers [Lee, Luthans and Hodgetts, 1996]

British Quality Association defined TQM as Total Quality Management (TQM) is a corporate business management philosophy which recognises that customer needs and business goals are inseparable. It is applicable within both industry and commerce. It ensures maximum effectiveness and efficiency within a business and secures commercial leadership by putting in place processes and systems which will promote excellence, prevent errors and ensure that every aspect of the business is aligned to

customer needs and the advancement of the business goals without duplicating or waste of effort

The commitment to TQM originates at the chief executive level in a business and is promoted in all human activities. The accomplishment of quality is thus achieved by personal involvement and accountability, devoted to a continuous improvement process, with measurable level of performance by all concerned. It involves every department, function and process in a business and the active commitment of all employees to meeting customer needs. In this regard the customers of each employee are separately and individually identified.

2.3 Emergence and Fall of Quality Circles

A quality circle (QC) is a small group of employees who represent the same work area or similar type of work. They voluntarily meet regularly for about an hour every week to identify, analyse and resolve work-related problems. The aim of a QC is not only to improve the quality, productivity and total performance of the organisation, but also to enrich the quality of work life of the employees [Udpa, 1992]

The concept of QC, like other quality initiatives, originated in Japan. QCs in Japan were formalised in 1960 by Japanese Guru of quality Ishikawa. The first few QCs were formed in Japan during 1962. Since then their number has been increasing at a phenomenal rate. These Circles were at first started at shop floor as group activity among workers and later took the name of Quality Control Circle. Later Americans modified the name to Quality Circle. It was in mid sixties, the Americans became aware of the QCs and implemented the concept with fairly encouraging results [Dey, 1998]

In India, QCs were started around 1982. It is generally accepted that QCs were first implemented in India by Bharat Heavy Electrical Ltd (BHEL) [Udpa, 1992]. In the following years QCs have grown in numbers and even in recent times, there has been an increase in number of QCs as a worker involvement component of the QMPs. The growth in the number of QCs in India even today is somewhat paradoxical in the sense

that western countries considered the implementation of QCs as a failure by late eighties and QCs virtually submerged in the wave of TQM [Jha, 1997]

2.4 Implementation of QMPs and Organisational Change

It is often seen that most of the organisations go for implementing QMPs in a mechanistic way. Managers do not perceive the implementation as a process of proactive organisational change. QMPs are not just quick fixed solutions that can be grafted on an organisation. Implementation of QMPs is, in fact, all about managing change, moving from a current reality to a more appropriate one, yet rather than being presented with a clearly defined problems to solve, a manager must deal with a mess of interacting issues [Bennett & Kerre, 1996]. Like other organisational changes, the implementation process of QMPs is also accompanied by organisational conflict. So any implementation process to be successful an appropriate strategy for managing the change process will need to be adopted. This strategy, on the other hand, should recognise the likelihood of the problems to be encountered as a result of the resistance to the organisational changes. Unfortunately literature is quite weak in this direction. There are professionals and academics studying QMPs as well as organisational change, but very few of them are studying the programmes as organisational change [Pike & Barnes, 1996]. As a result, literature lacks proper application of organisational theory. "Many approaches to manage quality have been proposed by practitioners and academics including Gurus like Deming, Juran, Crosby and Feigenbaum. None of these prescriptions have been derived from organisational theory. Rather, they are based on author's many years of practical experience in the field of quality" [Benson, Saraph and Schroeder, 1991]. However, it has been observed that in the recent years a few researchers in the field of quality have addressed certain issues pertaining to the implementation of QMPs in the light of organisational theory. The proceeding sections of this chapter present a brief account of the issues addressed in the literature in this direction.

2.5 Limitations of Enabling Structure for Implementation of QMPs

An appropriate organisational structure is always necessary to manage quality initiatives in any organisation. But the most challenging task is to determine the appropriate organisational structure to support these initiatives. One of the major idea behind implementing these QMPs is to become customer oriented. By implementing QMPs, an organisation tries to become more responsive to the customers. This requires a high degree of integration among various functions the organisation performs as well as complete elimination of bureaucracy. In the words of Deming, an organisation 'needs to break down the barriers between departments' to become customer responsive. According to Schlesinger [1996], an organisation going for implementation of quality initiatives can use the concept of boundarylessness in their process. Boundaryless organisations keep people in the organisation close to their customers both internal and external so that they can hear, see and feel customers requirements. Practices that impede process improvement and promote wasted effort are decreased. Any process or action in the organisation is viewed in terms of the added to the organisation as a whole and not to the unit or function of which it is a part.

A boundaryless organisation may be the ideal organisation for implementing QM initiatives. But the critical problem is how to change a traditionally hierarchical organisation to a boundaryless one. It was not mentioned anywhere in the article. Generally organisations implementing QMPs do not change the original organisational structure through restructuring activities. Instead they accept the existing hierarchy and try to use it to produce system improvements. They place more emphasis on internal customer relationships and much less emphasis on restructuring work or work situations to make individuals and work teams more autonomous and individually responsible for dealing with customers [Lawler III, 1994]. Instead of changing the original hierarchy, in most of the organisations QM initiatives are managed by a parallel learning structure having some interfunctional and interdepartmental teams. The parallel organisational structure made to manage QM initiatives involve steering committees, quality improvement teams, quality councils with a variety of roles and pet names. This structure is generally overlaid on the existing structure rather than adding

to the staff functions[Pike & Barnes, 1996] Such a supporting structure incorporates elements from both the formal and informal organisations and functions essentially outside and parallel to the formal organisation. It has structure of its own and operates under different rules and principles from the formal organisation. It creates a new combination of people and charges them with quality improvement related tasks. In fact, quality programmes try to reinforce rather than challenge the mechanistic and hierarchical understanding of organisations subscribed to by a majority of managers. Thus a more effective implementation of quality initiatives as defined by quality gurus may generate even more problems than they solve [Knight & McCabe, 1997]. The problems inherent to the enabling structure as well as when it functions with functional structure of an organisation. Problems can arise from conflict between the quality management and formal functional structure. When quality task forces are made up of junior level managers, there is a risk that their effort will be stifled by the formal structure. For a system of task forces to be effective, either senior level managers must be involved, or the CEO must throw his or her weight and influence behind the quality groups. Whenever additional organisational units are created to implement Quality Management Programmes, there is a danger of increased administrative cost and slower decision making[Krishnan et al , 1993]

2.6 Role of Middle Management in Implementation of QMPs

Middle managers can play a crucial role in any change programme. They can be powerful agents of change or they can be significant blockers of change. Middle managers are in such a position in an organisation that they can influence the supervisors and employees on one hand and the senior managers on the other hand along with their middle management colleagues. So it is very crucial to get their support in the change efforts [Pike & Bernes, 1996]

Literature seems to pay much attention to the role of the top management in the implementation of QMPs and very few researchers seem to have studied the role played by middle management in the process of implementation. The studies conducted in this direction reveal that middle managers can play a role as important as the top management in the QM activities. A study conducted among Indian industries

[Anand, 1996] reveals that top management commitment, involvement and leadership is necessary in the process of implementation of quality improvement programmes but it is not sufficient to implement the programme successfully in any organisation. What is sufficient is the commitment, involvement and leadership of a large number of middle level managers and employees at the supervisory and operative level. A quality improvement programme cannot take off without their active involvement.

Sayles [1993] explains the importance of the middle level managers in any hierarchical organisation. According to him, middle managers in any organisation are those players who can facilitate trade-offs among the diverse parts of the organisation. While project groups and teams and the first line supervisors can help, managerial intervention is often needed to resolve many of the contradictions and inconsistencies that exist in a large organisation. It is the middle managers who must 'massage' the parts and continuously 'rejiggle' and reconfigure the interfaces. Without their co-operation, the real work of the organisation will never be performed.

In any organisation, implementing QMPs, another conflicting situation arises due to change in roles of the middle level managers and the supervisors. In the process of reshuffle, they become powerless. Their traditional authoritarian role has changed, and they feel disenfranchised and can be key resistors to any change. It is important that organisations ready to implement QMPs recognise the changing role of the leader, and either give them new skills in the coaching and developing of work teams or abandon their role entirely [Holpp, 1989]. Walton [1985] while highlighting the changing role of supervisors states that the basic change in their role is from imposing control to eliciting commitment. The supervisors in the new environment require to facilitate rather than direct the work force and to help them to develop the ability to manage themselves rather than merely practice their own technical and administrative expertise. In practice, the supervisors need to delegate away most of their traditional functions, often without having received adequate training and support for their new functions like team building and having their voice, dignity and fulfilment recognised.

In a survey conducted by Anand [1996], it is pointed out clearly that in the post implementation period of QMPs, middle managers feel that they are a neglected lot and

are not considered as managers but as scapegoats by top management and workers. Even after implementing QMPs top managers give priority to quantity over quality. To middle managers top management is only 'talking' about quality and not 'practising' quality. Thus they continue to suspect the top management's commitment to quality.

The resistance of the middle managers to the QM initiatives may not be visible to the top management. They rarely show open resistance to programmes that top management initiates as they also consider themselves to be a part of the management. Moreover, they do not have the access to the formal mechanism for voicing disenchantment. Still, their negative attitude towards the proposed changes as well as the change process itself is not completely covert. They occasionally criticise a programme in discussions with peers and subordinates. They often remain silent and demonstrate little enthusiasm towards the programmes. This itself is sufficient for their subordinates to interpret their support or lack of it to the change initiatives [Klein, 1984]

2.7 Employee Involvement and Empowerment in Organisations

Implementing QMPs

Employee involvement (EI) programmes have a positive effect on the performance of the company and the internal business conditions [Lawler, 1992]. As more and more organisations delay and downsize to increase productivity and reduce costs, involving employees in decision making reaps various advantages. With fewer layers of management to supervise work, and with the nature of the managerial job changing from control to facilitate, organisations must have employees who can take decisions [Kotter, 1990]. EI programmes can be seen as opportunity in the competitive market environment. The main idea of employee involvement is to enable decision making down to the lowest level in the organisation. This does not mean that all decisions must go to the lowest level, rather it means that each employee has the information, the perspective, the tools and the power to take decisions related to their work. Though TQM involves some of the same elements of the employee involvement programme, there are certain differences in the two approaches [Lawler, 1992]

Involving employees in the decision making also requires that management share power across the organisation, otherwise employees would be unable to make decisions that affect their work. Parallel organisational structures that involve teams and committees, which are separate from the normal procedures of the organisation, are one way that employees can be involved. Activities like Quality Circles, Quality of Work Life Group and other group activities are some of the parallel structures used to transfer power down the organisation. Suggestion programs are another way organisations try to transfer power [Schlesinger, 1996]

The extent of power given to the employees involved in different cross functional group activities can be a major constraint to them while implementing their decision. Tom Peter's book, *Thriving on Chaos*, outlines the findings of an assessment of the problems faced by different Quality Circles and mentions that failure of the organisations to implement the proposals of the Quality Circles is a major problem faced by the whole programme [Pike & Barnes, 1996]. Unless employees involved in group activities are empowered properly to implement their decisions there can be very less impact of these programmes in the organisation. According to Thompson [1998], the cross functional teams involved in different quality related projects can become successful in achieving their goal when they are given high autonomy. Higher level of autonomy appears to increase the probability that the team will accept a stretch goal, and the team's control over how work is done appears to increase the likelihood that team will achieve the stretch target. For a team to have more autonomy and control the organisation must become bureaucratically immune. Bureaucratic immunity can give a team freedom from lengthy review process needed to take a decision in an organisation. Teams often get full control with minimum interference from the other parts of the organisation.

In a traditionally hierarchical organisation it is often difficult for the teams to get full autonomy in their work. In these organisations, managers love empowerment in theory, but the command and control model is what they trust and know best. For their part, employees are often ambivalent about empowerment - it is great as long as they are not held personally accountable. Even change professional often stifle

empowerment. Thus, despite all the best effort that have gone into fostering empowerment, it remains very much like the “emperor’s new cloth” [Argyris, 1998]

2.8 Support of Union to QMPS

Change implementations must have broad based support for change from across the organisation. The support of a strong leader always help in the process of implementing change. TQM’s emphasis on communication, synergy, and employee involvement makes it possible for informal leaders across the organisation to be tapped as key sponsors in the process of implementation [Schlesinger, 1996]. Most of the organisations implementing TQM initiatives try to ensure that the union does not become a barrier. Union may not have any desire to see quality programmes fail, but they cannot be expected to simply stand on the side lines and watch their roles being changed and their members’ jobs being altered without any consultation. So ignoring the union may simply give rise to suspicions that central purpose of the exercise is to reduce their influence and as a result the process of implementation may get doomed before it even started [Pike & Barnes, 1996].

Managers in their attempt to influence the union may adopt manipulative techniques like co-optation. Co-optating an employee usually involves giving him or her a desirable role in the design and implementation of the change programme. Co-optating a group involves giving one of its leaders, or some one it respects, a key role in the implementation of the change. But this is not a form of participative management as advocated by quality Gurus [Kotter & schlesinger, 1979]. Still some form of co-optation is always used by the management before implementing a TQM programme. A quality council is often used as a suitable vehicle to involve the union leaders and other opinion leaders in the planning of TQM implementation. It also helps in securing the views and suggestions of those at the sharp end on how the methods and activities are to be carried out in the whole process of implementation [Pike & Barnes, 1996].

Advocates of employee involvement argue for a coherent relationship between labour and management that makes union partner in the organisation’s success and regards them as critical players in helping the organisation achieve its goals. This kind of a

relationship is much more compatible with total quality management efforts. The union also assumes responsibility for quality, thus creating opportunity for more systems thinking and more problem solving. These relationships also help to create a climate in which employees participate in many of the important decisions affecting quality. In the absence of union support for employee problem solving and union/employee participation in improvement groups, there is a danger that the employees will not trust the process, and union will ultimately reject the activities that are part of the total quality programme [Bowen & Lawler III, 1997]

R. E. Walton, in one of his articles [1985], discusses the issue of union/management relationship during implementation of a change programme. He says that while implementing change programmes some companies seek to decertify their union bond, at the same time strengthen their employees bond to the company. Others pursue co-operation with their unions, believing that they need their active support. The interest of the management in seeking union's co-operation intensified in the late 1970s when it became clear to them that only by work force effectiveness they cannot survive in the market and they need some wage negotiations with the workers. The collaboration between union and management in the employee involvement programmes like Quality of Work Life gave the union the opportunity to influence over matters which were previously subject to management control. At the same time it also left scope for the management to use these programmes to use as a platform to appeal to the workers directly in issues like wage concession.

Review of the existing literature has enabled us to identify certain key issues that need to be explored deeply to understand the hurdles faced by the change agents while managing the implementation of QMPs. It can be expected that a better understanding of these issues can itself show the way to implement the change programmes like QMPs smoothly in any organisation. To explore these issues more deeply a secondary analysis of four cases was performed as a part of our study, which is presented in the next chapter.

SECONDARY CASE ANALYSIS

3.1 Introduction

This part of the study is basically a further exploration of four real life cases that deal with the implementation of QMPs in four Indian organisations. The primary objective here is to have a deeper understanding of the organisational changes associated with the implementation of QMPs in an existing organisation and the problems, the 'change agents' confront as a result of organisational conflicts that the change programme creates. The cases that are used for analysis are not original work of the researcher and hence the term 'secondary' is used.

The rationale for the choice is that it provides a vehicle for further exploration of the previous cases to get deep theoretical insight. It is mainly a further analysis of existing data set which presents interpretations, conclusions, or knowledge additional to, or different from those presented in the first report. The major advantage that can be achieved through secondary analysis is both in terms of time and resource [Hakim, 1983]

The study of the four cases enabled the researcher to observe some similar pattern of organisational changes associated with the QMPs that contradicts with the organisational life. It gave the opportunity to arrive at some conclusions different from the previous researchers of the cases. It was not possible for the previous researcher to arrive at such conclusions due to inadequate references to make a comparative study. Even now statistical generalisation of the findings cannot be claimed and it needs further empirical study. However, the analysis gave valuable input to the researcher in building the framework for the next phase of research.

3.2 The Case Studies

The case studies chosen for analysis represent mainly two sectors of Indian industry - manufacturing and process. Out of the four cases two are from manufacturing sector and two are from process sector. Names of these organisations have been disguised to protect their identity. The organisations will be referred in this analysis as organisations A, B, C and D. A brief introduction to these organisations is given below.

Organisation A is one of the largest private sector companies in India and the only multilocal aluminium manufacturer in the country. The organisation was incorporated in 1938, and the plant where this study was conducted is one of the oldest plants of the organisation with a capacity of 6000 tonnes per annum. The present employee strength of the plant is 631.

Organisation B was established in 1981 as a PSU with the objective of modernising Indian automobile industry for economic growth of the country. Presently it is producing 3.5 lakhs vehicles per annum with an employee strength of 6039.

Organisation C came into existence in 1987 as a Colour Picture Tube (CPT) manufacturing company under a large private group of this country. Earlier it was a government-owned organisation producing similar range of products. It has an employee strength of 1730 and most of them are from the earlier organisation.

Organisation D is also a Colour Picture Tube (CPT) manufacturing company under a private group. It was established in 1987 and within seven years it has become one of the largest producers of CPT in the world. Present turnover of the company is around 650 crores with an employee strength of 1120.

Here we restricted ourselves from presenting further factual details of the cases. The minimum facts we are giving in the proceeding sections are only to visualise the analysis performed as a part of this research.

3.3 Initiation of QMPs in the organisations

As a first step of the study it was of interest to know what motivated the organisations to embark upon the QMPs and it was found that the initiatives were fuelled or rather forced by the market. It was observed that QMP initiatives were taken in all the organisations as a part of their measure to face the challenges posed by the market.

- Organisation A started their TQM programme in 1991, when global prices of aluminium soared by 87% and the company was facing severe raw material crisis. The new CEO started TQM in the company as a measure to cross the barriers of the market.
- Organisation B started their TQM programme from the inception of the company as a part of their effort to absorb the culture of their foreign collaborator. Of course, another way of looking at their effort is that organisation B entered the market when Indian automobile market was dominated by Hindustan Motors and Premier Automobiles Limited.
- Organisation C started QMPs when it lost the export market of CPT mainly due to the fall of USSR and when faced tremendous competition in the domestic market from the foreign branch.
- Organisation D started QMPs due to the influence of some foreign collaborators. The significant difference of this company's effort towards quality initiatives with other companies is that the whole effort was not initiated in response to environmental changes but because of the values and personal belief of the top management of the organisation.

The QMPs were started in the organisations either as a measure to confront the environmental changes or as a desire to achieve excellence through these programmes as felt by the top management.

3.4 Influence of Collaborators or Joint Venture Partners in QMP Initiatives

All the organisations taken for study had foreign collaborators either as technology provider or share holder in the company. There is ample scope to think that the foreign collaborators had some influence in the quality improvement initiatives. Except organisation B, none of the other organisations had any visible impact of collaborators in the QMPs. In fact, in organisation D, the collaborators resisted indirectly in its effort towards implementing the programmes, insisting them to absorb the technology first instead of going for QMPs. It was only because of the belief and desire of top management for excellence that the organisation started its QMPs.

3.5 Employee Age and Education

The study revealed that employee age and education had significantly contributed to the success or failure in sustaining participation of the employees in the QMPs. Basically if the organisation is fairly old and so are its employees, they are less interested in learning new things and taking additional responsibilities that employee involvement programmes often demand. As a result, the 'change agents' find it difficult to involve them in the programmes. New and young employees can be moulded with less effort to fit into the new culture of the organisation implementing QMPs.

In organisation A, most of the old workers openly demonstrated their reluctance to participate in Small Group Activities (SGAs) as well as other activities conducted as a part of QM initiatives. The same was the case with organisation C, where most of the workers were from an old government owned organisation, that the private group actually took over.

Another hindering (or facilitating) factor, as observed in the cases, is the educational background of the workers. This is because in participative form of management workers are expected to bring new ideas and problems related to their work so that the quality of work life can be improved with this incremental effort from the workers. The whole process of problem identification and solution needs deployment of

statistical tools and techniques Unless the workers understand the tools and techniques it is difficult for them to give quality result in the group activities

Both organisation A and C's employees were unable to find a second problem in their SGA and QC activities During the first QCs the supervisors acting as facilitators actually helped in the identifying the problems to be taken and in finding their solutions When the workers were left alone to find the second problem for discussion they could not do that On the other hand, organisation B's workers gave a better picture than the other organisations Their performance in both QCs and Kaizens were consistently satisfactory Looking at the educational background, it was seen that organisation C's workers had a better educational background in the sense that the minimum educational qualification of the lower level workers was ITI certificate Majority of the workers in organisation A and C had education upto 6th or 7th standard

3.6 Organisational Structure to Support QMPs

Quality improvement activities are better supported by a flat organisational structure [Schlesinger, 1996] But it is very difficult in an originally hierarchical organisation to crush the earlier structure within a short span of time Instead, most of the organisations drive their QMPs with the help of an enabling or supporting structure parallel to the original functional structure Our study revealed that except organisation B, all the organisations relied on such parallel learning structure comprised of teams and committees to drive their QMPs

Organisation A did not have any TQM department as management consultant involved in the TQM implementation process thought that such a department would become added on the existing structure They also did not take any effort like changing the existing structure of the organisation to make the organisation less hierarchical Instead they found the existing structure satisfactory for implementation of TQM at the initial phase This was done mostly because of the fear that sudden change in hierarchy could result in resistance from the employees towards TQM implementation The structure

made to support IQM initiatives at organisation A consisted of different committees and councils

- 1 **Shop Council** comprised of equal number of members from union and management to discuss the grievances procedures.
- 2 **Joint Council** comprised of equal number of members nominated by the management and union for solving problems related to productivity overall efficiency of plants, safety, etc
- 3 **Joint Canteen Committee** comprised of equal number of members nominated by company and union to discuss and solve canteen related problems
- 4 **Works Steering Committee** comprised of members nominated by the management and representatives of the union to discuss and review policy decisions and promote TQM, Kaizen, HK, SGA, BGC, etc
- 5 **Departmental Steering Committees** to review the goals targets and quality indicators concerned with the particular department and to discuss the progress of SGAs, BGCs, and Kaizens

All these committees were consultative and advisory in nature and without any executive power. One of the major disadvantages, this structure had was that it did not have any control over the implementation of decisions. For implementation of decisions it was highly dependent on the original structure making the whole process of implementation complicated. Another major disadvantage was that the committees were not having autonomy to take a decision within its capacity. They had to refer most of their decisions to the top management committee for its approval. As a result, all the suggestions coming from the group activities used to move from department steering committee to work steering committee and sometimes to the top management committee at the corporate office before its approval for implementation. It was a common complaint of the workers that most of their suggestions were delayed in

implementation or not implemented at all, especially one involving considerably high amount of resources

The SGAs were not successful in organisation A due to lack of participation from workers and inability of the programme to give any fruitful result. The SGAs were ultimately sidelined and replaced by another employee involvement scheme called BGC and as claimed by the management BGCs were a big success. The major difference observed between BGC and SGA was that unlike SGA, BGCs were top driven activity where workers were not involved in identifying projects. The workers implement only problems identified by the middle management. The projects were selected in a very structured manner so that it led to achievement of company's goal.

Organisation C's supporting structure for TQM consisted of mainly two committees

1. At the corporate level, **Corporate TQM Committee (CTQM)** headed by Senior Vice President and with all Vice Presidents (VPs) of different functional areas as permanent members. The VP (HRD) was the convener of this committee,
2. At the plant level, **Plant TQM Committee (PTQM)** headed by plant head and functional heads at plant level along with VP(HRD) as member. The Manager(TQM) was the convener of PTQM.

One of the significant problems with the CTQM committee and PTQM committee was that the meetings of these committees were difficult to schedule because all the members were mostly involved in core activities and they had little time to devote for these committees. So, as many respondents revealed, the TQM initiatives were mostly steered independently through the push of the departmental heads and not through the enabling structure. Seeing the ineffectiveness of the enabling structure many managers felt that these activities related to TQM should be internalised in each of the departments rather than creating an external structure to guide them. It was not clear what really motivates the departmental heads to drive the programmes. One significant

reason may be the presence of a Manager with independent charge of TQM, who might influence the departmental heads to take the initiatives

Implementation of QCs in organisation C was guided by another hierarchical structure with top management, steering committees, facilitators, leaders and members. The steering committee consisted of heads of production, design, quality assurance, commercial and HRD. It was chaired by the plant head and convened by the Deputy Manager (TQM). The Quality Assurance Department was the co-ordinating agency with three middle managers as its members. This committee was responsible for co-ordinating activities of QCs all over the organisation and to assist the steering committee to identify areas that needed corrective actions.

This supporting structure also faced considerable difficulties in implementing QCs. Firstly, the committees faced problem in implementing suggestions which required the help of more than one departments. Secondly, the suggestions involving support of employees who were not involved in the supporting structure were also difficult to implement. Thirdly, some suggestions required large resources and hence needed approval of top management, which were rarely cleared for implementation.

In organisation D also it was a similar enabling structure comprising of co-ordinators, lead teams, facilitators, leaders, deputy leaders and members made to support the QCs. The purpose of this structure was stated in the company document as 'to accelerate the quality programme to meet the challenges of the emergent competitive environment'. An HRD person was selected as the co-ordinator to demonstrate support and provide resources. The lead teams set policy, provide resources and review the QC implementation. An engineer or a supervisor was nominated by lead team to operate a particular QC. Leaders and deputy leaders were selected by the QC members among themselves.

This structure also faced the same problems encountered in the other two cases and ultimately HODs of each of the departments were requested to monitor the progress of the QCs in their departments and to encourage the QC members for their initiatives. For interacting with the facilitators of the QCs, schedule of the QC meetings were also

distributed among the HODs But lack of interest of the HODs were a consistent problem in QC implementation

The analysis revealed two major discrepancies in the enabling structure of the organisations that limited the effectiveness of the whole QMPs

- 1 The enabling structure had committees that are purely facilitating or advisory in nature without any executive power Ultimately all the suggestions that come from bottom had to reach the top management committee crossing different levels in the hierarchy of enabling structure for its final approval The enabling structure indirectly seemed to support the hierarchical nature of the organisations instead of challenging it As a result, the whole QMPs suffered from slower decision making as well as delay in implementation of the projects
- 2 The enabling structures are also highly dependent on the main functional structure of the organisations Any project or suggestion approved by top management ultimately gets implemented through the main functional structure of the organisation The major disadvantage of this dependence of the enabling structure is that the administration of cross functional projects and the projects that need the support of people outside the enabling structure become complex and often delayed

3.7 Role of Middle Management in the QMPs

The role of middle managers in the QMPs was not studied in any of the cases Literature says that role of middle managers changes from controlling and commanding workers to facilitating them in the post implementation period A deep insight into the cases shows that in a typically hierarchical organisation the enabling structure fails to give the middle managers a role appropriate to their capacity in the organisation In an Indian organisation there is a tall hierarchy of middle managers and they have enormous power in the functional structure The failure of the enabling structure to involve the middle managers as powerful change agents actually deprive the whole change programme from getting their active support What QMPs gives to the middle

managers is a dual role of controlling the workers in the core activities of the organisation and at the same time facilitating them in all QMP related activities. So if the middle managers in any organisation decide to alienate themselves from the programmes then those few middle managers working as facilitator in the programme of change can face a traumatic situation between two power groups.

In case of organisation D, the trauma of middle managers in the post QMP period was demonstrated clearly by the resignation of a middle manager, who was active in the whole process of implementing QMPs, from the steering committee. His only reason for resignation from the whole programme was that the ridicule of his colleagues made him no more interested in involving himself in the programme. In the same organisation some other middle managers expressed their dissatisfaction by saying that QMPs ultimately increased the influence of supervisors in the organisation.

3.8 Union Support to QMPs

Successful implementation of QMPs needs active support of union leaders. Union leaders can become powerful supporters of the problems as well as resisters depending upon the kind of approach management takes in involving them in the whole change process. Most significantly in all the cases it was observed that management tried to employ co-optation in getting support of the union leaders before starting the QMPs.

In organisation A, all the union leaders were members of the steering committees related to all QMPs. Most of these leaders were given an active role in the training programmes and seminars conducted in the organisation. So it was observed that these leaders were active supporters of QC and other QM initiatives. This move of the management, not only enabled the management of the organisations to get their support but also made the communication between management and union far better than before. One union leader when asked about the present relationship between union and management replied, "We are like family members here and the relationship has improved after TQM implementation as the communication has improved between us."

The TQM co-ordinator of the same organisation commented on the role of union in the whole implementation process as, "The role of the union was very vital and TQM implementation would have otherwise been impossible without their support "

But the active support of the union leaders QMPs do not provide a complete picture of the whole situation. There is also a darker side of union's involvement in the programmes. It was seen in the case of organisation A that union leaders used TQM initiatives as a medium to put pressure on management during wage negotiation by asking the workers not to participate in SGA and BGCs. Ultimately union leaders made TQM a part of their politics. When an union leader was asked by the researcher about this he kept silent.

This changing attitude of the union leaders from time to time even annoyed many workers. Some workers became suspicious about the role of union leaders in the post TQM period. One young worker said to the researcher at organisation A, "The union leaders are cheats and corrupt. They are being bribed by the management in form of money and employment of peers. They do what management asked them to do and we are trapped between union and management "

In organisation C, most of the managers and union leaders reported that the relationship between union and management had improved in the post TQM period. Some senior managers stated that they had established and brought in transparency between union and management. They had developed fair understanding with the union. Notably in the post TQM period organisation C management initiated many welfare projects for workers.

Regarding TQM initiatives the chief of the union told, "The union got strength of the new initiatives taken by management. So the union do not compromise on quality, production and discipline." But supervisors in the organisations had a different view point. They claimed that involvement in these programmes ultimately made the management to take a soft attitude towards the workers and as a result it became increasingly difficult to exercise command and control over the workers at shop floor.

3.9 Responsibility of the Employees in the Post QMP Period and Autonomy Given to Them

There is a significant increase in the responsibility of all the employees involved in QMPs during the post implementation period. This increase in responsibility is felt mostly at the bottom level of the hierarchy. In organisation A, though the top management was of the view that TQM activities in their organisation had little impact as far as their responsibilities were concerned. At the same time the workers and the middle management responded that there was a significant increase in the responsibility in the post TQM period. After implementation of different employee involvement activities related to TQM, the supervisors had to act as facilitators in all the QMP related group activities in addition to their regular work. On the other hand the workers had to participate in the group activities in addition to their production related work. Sometimes even the workers need to participate in these activities during their off time. This gave them a sense of overburden, and ultimately, they started to claim monetary benefits for their participation in the QM related activities. Though the cases of organisations C and D did not focus on the increase in responsibility of the workers at the lower level, it was observed that workers in those organisations also raised the issue of monetary benefits from time to time. One worker at organisation D even commented that by not paying over time, the management was not recognising the responsibilities involved in these activities. Many workers and even supervisors in organisation D withdrew from the QCs stating that it was difficult to find time regularly for these activities.

Though the workers were given increased responsibility, there was no such increase in autonomy of the workers. None of the organisations was observed to give their workers at least that extent of autonomy so that they need not look for approval of top authority for small improvement they wanted to do in their work place. All the suggestions used to go to the top committees before their approval. One reason of not giving enough authority to the workers participating in the group activities was cited by a manager in organisation A as 'most of the suggestions coming from workers were not practically feasible and hence they need review before implementation'.

Lack of autonomy of the workers in implementing their suggestion may be another reason behind their claim for money or their disinterest in participation in the employee involvement programmes

3.10 Employee Participation

The voluntary form of participation in the group activities did not really succeed to sustain the participation in any of the organisations. Most of the managers had the general perception that it is difficult to attract the worker towards voluntary form of participation in India. One of the managers in organisation B even stated, ‘Nothing voluntary works in any organisation in this country and for that matter in any country where western culture prevails’

The striking features, observed invariably in all the organisations, regarding workers’ participation in the group activities are as follows

- 1 Most of the employee involvement activities became dormant or extinct due to lack of participation of workers. Most of the workers in these organisations cited the reasons like lack of time to participate in these activities, loss of motivation due to non-implementation of suggestions and so on. In organisation A, SGAs had to be sidelined and replaced by BGC due to lack of participation from workers. In organisation C, some of the QCs were closed due to poor attendance.
- 2 Workers demanded overtime from time to time for participating in group activities in all the organisations. The workers felt that the problems they solved in the QCs are mostly to improve the performance of the organisation rather than improving their work life and hence they should be compensated with monetary benefits. The BGC in organisation A can be pointed out as one of such activities where workers solved problems mostly dictated by the top management. Most of the problems were decided by the middle management and workers were involved mainly in their implementation.

So the problem of sustaining workers participation was always there in all the organisations studied except organisation B. The main reason behind organisation B's success in the QCs and Kaizens is that the participation of all the workers is mandatory in these programmes and all these activities are done during the work hours of the plant and even at the cost of stopping the production line.

3.11 Implementation Problems Identified

The present analysis focused on such issues that considerably hindered the process of QMP implementation, but were inherent to each one of the programmes. These problems are the result of organisational conflict resulting from the process of organisational change brought about by the QMPs. The following are the significant problems as emerged from this analysis:

- 1 In any hierarchical organisation, the enabling structure made to drive the QMPs itself is highly centralised. When a decision is taken in the committees and teams that constitute the enabling structure, it has to move through the hierarchy in the enabling structure and sometimes in the main structure of the organisation before it is really approved for implementation.
- 2 All the committees and teams that constitute the enabling structure are consultative or advisory in nature. So any implementation, approved from top management, really takes place with the help of the main structure of the organisation. The interaction of the enabling structure along the original structure makes the administration of the implementation process highly complicated.
- 3 Centralised decision making in the enabling structure as well as complexity in administering the cross functional projects often delays the whole process of implementing the quality projects.
- 4 In any hierarchical organisation, the parallel enabling structure finds it difficult to involve most of the middle managers. The central focus of all the QMPs becomes the workers at the lower level. Although, some middle managers are involved as facilitators, most of them are sidelined. So there is a general feeling among the

middle managers that all the initiatives taken in the direction of QMPs are meant for the workers welfare and at the same time are a threat to control and command they exercised for years. The whole implementation process fails to get active support of the middle management as a result.

- 5 QMPs increase the responsibility of the employees considerably. In the post implementation period the workers need to participate in all the activities like QC, Kaizen, HK, etc., apart from usual production related activities. Though all these programmes are made to involve the workers in the decision making process related to their work place, they are not adequately given autonomy to implement any decision taken by them.
- 6 Union leaders are generally made active partners in the implementation of QMPs. They are included in the committees and teams that steer the QMPs. They are sent for training programmes at the expense of the organisation. As a result, a better relationship is established between union and management for smooth implementation of QMPs. But at the same time the union leaders use the QMPs as a part of their politics to pressurise management as during the period of wage negotiation.
- 7 In any organisation where workers are accustomed to command and control, voluntary participation of workers does not take off easily. In all the organisations it is a major challenge to sustain the participation consistently. Some times, workers stop participation when they feel overburdened as during peak production period and sometimes as a part of bargaining during wage negotiations. Most of the workers do not feel that the group activities are for their benefit and hence claim monetary benefits for their participation from time to time.

The present analysis enabled us to address seven issues that pose hurdles in the smooth implementation of the QMPs in any organisation. Although, some of these issues were partially addressed in the literature (ref chapter 2 of this report), secondary analysis of the cases gave us a much clear picture. At this stage of the research it was felt that

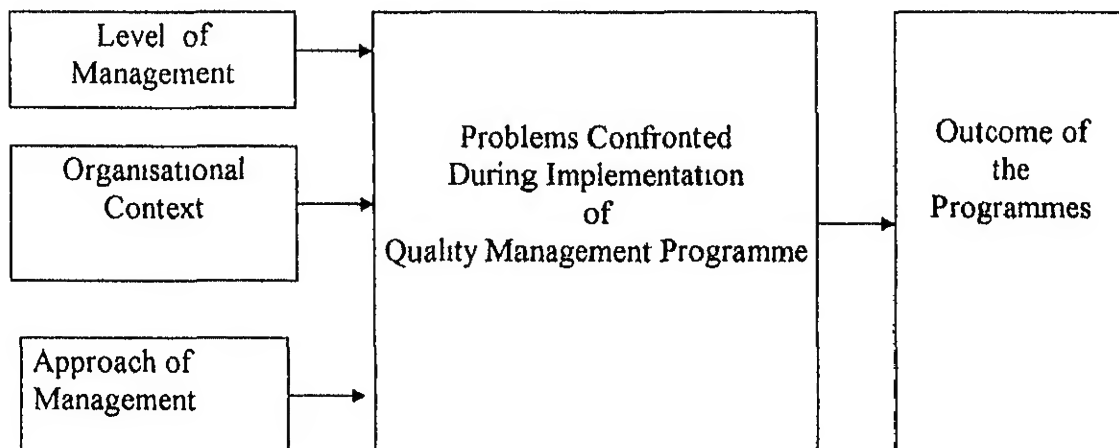
an empirical investigation of these problems could provide us a better ground to understand these issues more deeply. Keeping this objective in mind, in the next phase of the research, an instrument was developed for empirical investigation of the problems. The process of developing the instrument and the methodology adopted during the empirical investigation are presented in the next chapter of this report.

FRAMEWORK AND METHODOLOGY OF RESEARCH

4.1 Framework of the Research

The secondary analysis of cases and review of literature conducted as the first phase of research enabled us to identify seven problems confronted by the managers while implementing and managing the QMPs. The analysis of the cases provided us a deep insight of the actual practices in an organisation implementing QMPs. At the same time literature provided the conceptual input to identify the problems of implementation as a result of organisational conflict brought about by the change programmes. During analysis of the cases it was found that though the problems of QMP implementation are similar, the perception of the problems vary with level of management as well as from organisation to organisation. The organisations where the case studies were conducted had back ground different from one another and had different style of managing the programmes. So it is highly relevant to investigate the effect of these contextual factors on the problems of implementation. In addition, it is also important for the researcher to see whether the problems really have any impact on the outcomes of the programmes, as perceived by the managers.

The framework for further investigation into the problems can be represented by the model for the purpose of clear understanding.



4.2 Level of Management

It was observed in the case studies that the functions of different level of management in the implementation process are different. The top managers act as members of the top management committee for the implementation of the programmes as a part of the enabling structure and exhibit their commitment to the programmes by setting goals and reviewing the progress of the programmes. Middle managers are involved in the steering committees and the quality councils to act as facilitators to a number of teams and quality circles. The lower managers act as facilitator as well as team leaders to the assigned team working under them. This wide variation of the activities among the managers involved in the implementation process actually made them understand some problems more closely than others. In the case analysis it was observed that problems perceived by one level of managers as important may not be perceived so by other levels of managers. So it was one of our objective to observe how the perception of managers vary from level to level in the hierarchy of the organisation.

4.3 Organisational Context

The cases analysed in the previous chapter indicated that the age of an organisation has some impact on the problems related to difficulty in sustaining employee participation. In older organisations workers are generally not interested in participation in the group activities as in the case of organisation A. Literature, in addition, says that the size of the organisation, and the sector of operation has impact on the QM practices of the organisation. Company size may positively influence the actual QM practices since large organisations tend to devote more resource to the organised quality programmes than small companies [Saraph et al, 1996]. Companies sector of operation in the industry may be expected to influence the quality management, since the concepts of quality management have traditionally applied to manufacturing organisations and have recently began to influence other sectors of industry [Crossby, 1979, Sasser, Olsen and Wycoff, 1978]. Again some sector of industry may be forced to focus attention on quality management more in order to survive stringent customer requirement (such as those in defence industry) or demanding government product quality regulation (such as those in the drug industry).

[Adam et al , 1981] Though this study does not directly study QM practices and focuses on problems of implementation that emerges as a result organisational conflict, still it was of our interest to see whether the same contextual variables are going to affect the problems of implementation

Deming has mentioned that it takes three to five years to fully implement QMPs in an organisation. So it can be possible that the problems we are addressing in this study are mostly confronted in the initial stage of implementation of the programmes. To investigate this, the age of the QMPs was also included as a contextual variable

4.4 Approach of Management towards QMP Implementation

Participation of workers in the QMPs are voluntary in nature, as literature says [Udpa, 1992]. Our secondary analysis of the cases, in contradiction, revealed that some organisations used to make the participation of workers compulsory to sustain their participation. A manager in the organisation B, as mentioned in the secondary analysis of the cases (section 3.10), even went to the extent of saying Voluntary participation cannot take off in this country and in any country where western culture prevails. This further made us interested to explore whether this approach really pays with respect to the problems faced by organisations in the implementation phase. Literature also unequivocally preaches that union should be made partner of the change programmes like QMPs to ensure their support [Pike & Barnes,1996, Lawler III, 1997]. But our case studies revealed that involving union leaders in the enabling structure of the QMPs might give the opportunity for them to use the employee involvement programmes as a bargaining tool to pressurise management. So the effect of involvement or exclusion of union leaders in or from the enabling structure on the problems of implementation was also included in the agenda of empirical study.

Finally, as an approach of management towards implementation of QMPs, the empirical study included the investigation of the impact of restructuring in the organisation, in terms of change in the level of hierarchy or change in the number of functional departments during the process of implementation, on the implementation problems.

Table 4 1 presents all the contextual variables included for empirical investigation

TABLE 4 1 Contextual Variables Related to

Individual Managers	Organisations	Approach of Management
1 Level of Management	1 Industry Sector	1 Nature of participation
	2 Size of Organisation	2 Union Involvement
	3 Age of organisation	3 Benefits Given to Workers
	4 Age of QMPs	4 Change in the Organisation structure

4.5 Constructs of Implementation Problems

The variables in social science cannot be measured directly and hence require some items in a scale to measure them indirectly [Nachmias & Nachmias, 1985] These latent variables are called constructs In this research the constructs for the problems of implementating QMPs are identified from secondary analysis of the cases with sufficient conceptual input from literature of Quality Management and Organisational Change A detailed discussion of the constructs and items are presented below

4.5.1 Centralised Decision Making in the Enabling Structure

In any organisation, where QMPs are driven by an enabling structure, the whole system of decision making becomes centralised to certain extent The committees like steering committees, shop councils, etc are mostly consultative and advisory in nature with little autonomy to take decisions independently The proposals taken in these committees as well as the suggestions coming from various teams involved in the group activities of workers are often send to the top management committee for their approval Such suggestions and proposals cross different levels in the enabling structure as well as in the original structure before it is approved for implementation Thus considerably slows down the decision making process in the enabling structure and the responsiveness of the facilitating committees in the enabling structure, to their internal customers - the QCs, cross functional teams, etc - decreases considerably. In

fact, the enabling structure reinforces the mechanistic nature of the organisation rather than challenging it. The items included to measure the problem of centralised decision making in the enabling structure are

- 1 extent to which decisions taken in the steering committees are required to be approved by the top management,
- 2 extent to which suggestions from workers involved in QCs and other group activities are sent to top management committee for approval, and
- 3 involvement of the functional departments in the approval of decisions taken in the enabling structure

4.5.2 Complexity in Administrating QMPs Related Projects

The QMPs related projects are mostly cross functional in nature and need help from people not directly involved in the committees that constitute the enabling structure. Involvement of different departments as well as people outside the enabling structure makes any project related to the QMPs highly difficult to co-ordinate. In addition, steering committees and councils in the enabling structure, generally do not possess the power to hold any employee or department accountable even if he or the department neglects or refuses to give his support towards successful completion of the projects. This leads to problem of control of the projects. In the case studies, this problem of co-ordination and control were evident in the three organisations except organisation B. Literature also throws some light into the problems of control and co-ordination of cross functional projects in parallel learning structures. Some times the problem of co-ordination needs the top managers to throw their weight constantly behind the quality groups for successful implementation of the projects.

The items used to measure this construct are as follows

- 1 difficulty faced in co-ordinating projects related to QMPs,
- 2 difficulty faced by the teams involved in some quality related project to get support from people not involved in the programmes, and
- 3 delay in projects due to complexity in co-ordinating them

4.5.3 Resource Scarcity for Implementation of the Projects

Often steering committees face the problem of inadequate resource while implementing the projects related to QMPs. The facilitating agencies in the enabling structure are always dependent on the main structure of the organisation for arrangement of resources, mainly because of the centralisation in the enabling structure. Projects undertaken by different cross functional groups are often delayed for shortage of resources and some of the projects that require higher resources are not approved by the top management at all. This problem was observed clearly both in cases of organisations A and C, where supervisors and workers were expressing their frustration for this kind of delay. The delay in getting approval of projects involving high resources and frequent delay of the projects due to resources indirectly demoralises the workers and the supervisors involved in the projects.

Indicators used to measure the construct are

- 1 delay in the projects due to resource shortage, and
- 2 non approval of projects involving high amount of resources

4.5.4 Lack of Co-operation from Middle Management

In any hierarchical organisation, the middle managers occupy a crucial position in the organisational structure. They are those powerful players who can facilitate trade-offs among the diverse parts of the organisation. While steering committees and the first line supervisors can extend support to the project groups in implementation, managerial intervention is often required to resolve many of the contradictions and inconsistencies that exist in a large organisation. Without the support of middle managers, real work cannot take place [Sayles, 1993]. Our case analysis revealed one inherent problem of enabling structure that in a tall hierarchical organisation it fails to cover the middle managers in the committees and teams that constitute the structure. In fact, there is always a tendency to bypass them altogether. As a result, the whole QMP fails to get their support and some sort of negative feeling develops among them. The overall negative attitude of the middle managers towards the QMPs might reach such an extent that those few who are involved in the programmes directly could suffer from mental trauma for working between two group of people with different attitude - the members of the steering committees and the colleagues. In

organisation C, one active member of the steering committee resigned because of the ridicule from his peers

The items used to measure this construct are

- 1 extent of technical support provided by middle managers to the teams working on cross functional projects,
- 2 involvement of middle managers in sorting out disputes in the teams working on the projects,
- 3 encouragement to the workers for participation in the group activities like QC, SGA, etc, and
- 4 attendance of the middle managers in the seminars and training programmes related to QMPs

4.5.5 Difficulty in Sustaining Workers' Participation

Sustaining participation of the employee in the group activities is always a difficult task for many organisations embarking upon QMPs. In two of the organisations taken for case studies, it was observed that many employee involvement related activities of the QMPs died after a few years. In organisation C, the first initiative towards QCs failed to take off due to lack of participation in the wake of a labour unrest. Whereas in organisation A, the SGAs were sidelined due to workers reluctance to participate in the programme. Again, it was observed during the case analysis, that most of the workers participating in the group activities used to feel overburdened, and did not see any element in the programmes for the betterment of their work life. So, they raised the issue of monetary benefit for their participation in the programme. The participation of the workers also decreased during peak production period. Sustaining participation of workers in the group activities is always a difficult task for the managers involved as facilitators in the activities.

The following items are used to measure the construct

- 1 how often the workers demand monetary benefits for participation,
- 2 extent of participation in the group activities during peak production period, and
- 3 extent of participation during labour unrest

4.5.6 Lack of Support from Union

Union may become facilitating factor or hindering factor depending upon their support to the QMPs. Literature advocates that union should be made partner in the process of implementation of QMPs [Bowen & Lawler III, 1997, Pike & Barnes, 1996]. In the secondary analysis an interesting picture of union leaders' involvement in the QMPs was observed. It was observed that involving union leaders in the enabling structure indirectly increased the influence of union in the employee involvement programmes and the union leaders used the programmes as a tool for their bargaining. This dual role of the union leaders was observed in the case of organisation A. In the case of organisation C, such situations were not reported. In fact this organisation's management claimed that involvement of union leaders enabled them to get their support to the programmes and reduced their burden in attracting workers for the programmes. Except organisation B, in all the cases studied union leaders were members of various committees in the enabling structure and their support was visible. But the case of organisation B, did not mention anything about union leaders' involvement in the programmes. It was observed that organisation B's management was able to carry out the QMPs with less difficulty than the other three organisations.

The indicators used to measure the support of union leaders to the programmes are

- 1 Union leaders' attendance in the training programmes and other programmes related to QMPs
- 2 Union leaders' encouragement to the workers for participation in QMPs

The items to measure the outcome of the QMPs in the organisations as perceived by the managers are directly taken from the questionnaire used by Asian Productivity Organisation, Tokyo for their survey of TQM practices in the Asia Pacific region [Umeda, 1996]

4.6 Research Methodology

A wide range of research strategies are followed in social science

- Experimental investigations

- Survey research methods based on questionnaire and interviews
- Manipulation of secondary data
- Historical studies and
- Case studies [Yin, 1984]

None of these methods are self sufficient from research point of view, each one of them having some inherent advantages and disadvantages. A more general approach of research with a view to develop a sound theory could consist of five steps

- Exploration
- Construct development
- Hypothesis generation
- Hypothesis testing for external validity
- Testing for internal validity

For theory development in the field of Quality Management, a research approach would require a forward outlook in which

- (a) based upon literature in quality management, organisational behaviour, and general management theories, theoretical constructs of quality management are developed
- (b) these theoretical constructs are empirically validated ,
- (c) theories about the interactive effect of those validated constructs on outcome measures of quality management are tested [Ahire, 1996]

This research followed a similar approach, although, the primary objective of this research was not to judge QMPs, but to identify the problems confronted by the managers during QMPs implementation in an existing organisation as a result of the organisational conflict brought about by the programme. During first phase of the research a secondary case analysis was conducted to understand the problems of implementing QMPs in an actual organisational life with four case studies conducted by some previous researchers in four Indian organisations[Singh, 1997, Pathak, 1997, Jha, 1997] At the same time relevant literature in the field of QM and organisational change was reviewed to get conceptual input from the researches in this field. In the second phase of the research, an empirical study was conducted through questionnaire

survey mainly to see the significance of the problems identified in the first phase of the research and at the same time to observe the effect of different contextual factors on the problems. Questionnaire survey was conducted both by mailing questionnaire to different organisations and through personal visit to the organisations. The mail survey method has the advantages like lower cost, reduction in biasing error, greater anonymity of the research, higher accessibility. It has also potential weaknesses like no opportunity for probe, no control over who fills the questionnaire and low response rate [Nachmias & Nachmias, 1995]. To avoid the discrepancies of mail survey, responses from organisations nearer to Kanpur (Allahabad, Lucknow & Kanpur) were collected by a personal visit by the researcher. Constraints of both time and resource forced the researcher to collect responses from other places through mail.

4.7 Sample Selection

The organisations were selected for conducting the questionnaire survey from a list of companies supplied by the Associated Chambers of Commerce, New Delhi. Fifteen organisations from Kanpur, Lucknow and Allahabad, having active Quality Management Programmes of at least two years old were selected for collecting responses through personal visit by the researcher to the plants. The only reason behind selecting organisations from these sites was their geographical proximity to the Institute, that enabled researcher to conduct the survey in a considerably less duration. Most of these organisations were solicited to participate in the survey through the Quality Circle Forum of India, Kanpur chapter. The organisations were later sent formal letter from the Institute and contacted over phone to fix up the interview schedule.

In addition to these organisations twenty five other organisations spread all over India were selected for the survey by mailing questionnaires. All these organisations were considered to be among the best in the country for their QMPs [Business Today, 1996]. Unfortunately we could receive filled questionnaires only from four of such organisations. Appendix 5.1 in the next chapter, gives the entire list of the companies that participated in the survey along with their background information.

All the organisations selected for the survey are from manufacturing and Process industry. The Organisations have active QMPs of at least two years old and either have ISO 9000 certificate or are in a process of getting the certificate.

4.8 Respondent Selection

Respondents were selected in each of the organisations with the criteria to select only those managers who were directly involved in the process of QMP implementation in that organisation. In other words, all the respondents were selected from the members of the committees and teams that constitute the enabling structure. The primary reason for this was to avoid any bias in the responses as well as to collect genuine responses. This criterion on the other hand limited the sample size in each of the organisations visited. Though the responses in the organisations were tried to be collected across all the functional departments, most of the responses collected were from production and quality department. However, responses were collected from all the levels of management in a particular organisation.

4.9 Questionnaire Development

The initial draft of the questionnaire was built on the basis of the conceptual framework for the research. The questionnaire consists of three parts. Part A is made to collect data related to management level, organisation context and approach of the management towards implementing quality programmes. Part B of the questionnaire includes twenty statements intended to measure the problems confronted by management in the process of implementing QMPs. A five point likert scale ranging from 'strongly agree' to 'strongly disagree' (strongly agree = 5, agree = 4, undecided = 3, disagree = 2, strongly disagree = 1) was used to measure the perception of the respondents against each of these statements. Part C consists of statements to measure the perception on the outcome of the QMPs in terms of improvements achieved in eleven different aspects. The items were directly taken from Asian Productivity Organisation's survey report on their survey conducted to evaluate TQM practices in the Asia Pacific region. A five point likert scale ranging from 'very high' to 'very low' was used to measure each statements perceived importance (very high = 5, high = 4, moderate = 3, low = 2, very low = 1). An open ended request for comment and

suggestions of the managers on the QMP of the organisations was also included at the end of the questionnaire. A three digit number was used to code the questionnaire - first digit for the organisation, second digit for the level of management and the third digit for the serial number of the respondent in an organisation.

4.10 Empirical Validation of Construct

A thorough measurement analysis on instruments in empirical research is essential for several reasons. First, it provides confidence that the empirical findings accurately reflect the proposed constructs. Second, empirically validated scales can be used directly in other studies in the field for different populations. They also yield valid tools to practitioners for assessment in future [Flynn, Schroeder, Sakakibara, 1994]. A scale for a construct is useful for application by different researchers in different studies only if it is statistically reliable and valid.

4.10.1 Validity of Scale

The problem of validity arises because measurements in social science are always indirect. Under such circumstances, researchers are never completely certain that they are measuring the precise property they intended to measure [Nachmias & Nachmias, 1985]. Validity analysis is performed by using one or more of the following methods: content validity, convergent validity and discriminant validity.

An instrument has content validity if its items representatively sample the intended domain of concepts it is intended to measure. Convergent validity is the extent to which varying approaches to construct measurement yield the same results. A scale exhibits discriminant validity if its constituent items estimate only one construct.

The scales must be tested for content validity before any further refinement. Inadequate content validity indicates that the items in an instrument do not properly measure the constructs and that any analysis conducted is meaningless. An instrument has content validity if its items representatively sample the intended domain of concept it is intended to measure. If the items corresponding to various constructs of an instrument are derived from comprehensive analysis of relevant literature, content

validity can be ensured [Rossi, Wright, Anderson, 1983] The discussions in the preceding chapters on the development of the constructs reflects relevance of the items to the constructs Still, the initial draft of the questionnaire was given for content validity to four experts in the field of quality, two of them are from academics with rich background of teaching and consulting in the field of quality and other two persons are consultant of National Productivity Council, Kanpur Before preparing the final draft of the questionnaire several iterations were made to incorporate the suggestions coming from the experts

4.10.2 Exploratory Factor Analysis

The conventional approach to scale refinement consists of (1) identifying items relevant to the particular domain from literature, (2) designing a survey instrument to measure these items, (3) conducting a field survey, (4) performing an exploratory factor analysis (often with varimax rotation) on the item responses to identify major factors according to items factor loading, (5) refining the scale using Cronbach's scale reliability coefficient alpha

Exploratory Factor Analysis (EFA) has major limitations First, items are assigned to factors on which they load most significantly However, an item may load, to considerable extent, on more than one factor, and thus, it may affect measurement of all the factors simultaneously In other words the factors may not be distinct Second, a factor may consist of items that correlate with one another only statistically Their correlations can not be theoretically explained When such items are forced into one factor, the factor may not have practical validity [Ahire, 1996]

Principal component analysis with varimax rotation was performed on our data set It should be mentioned here that the questionnaire initially had 20 items, but later two of the items related to autonomy of workers in their workplace were eliminated from the analysis It was done mainly to eliminate the possibility of getting biased response for the two items, as the sample respondents of this survey consists of only managers from different level

Principal component analysis with varimax rotation reduced the 18 items into five factors. One of the items (item 13) that belongs to the construct 'lack of co-operation from middle managers to the programmes' was not loaded heavily into any of the factors. Remaining 17 items were heavily loaded to five distinct factors as shown in the table 4.2

TABLE 4.2 Loading of the items on the five factors after principal component analysis with varimax rotation

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	528				
2	851				
3	700				
4		627			
5		793			
6		666			
7			809		
8			757		
9			508		
10				814	
11				867	
12				721	
13					
14					704
15					638
16					757
17					848
18					618

*Loading below .5 are not shown in the table

** Total variation explained by the factors is 68.73 %

Factor 1, 2, 3 and 4 exclusively represent the problem constructs 'centralised decision making in the enabling structure', 'complexity in administrating QMPs related projects', 'resource scarcity for implementation of the projects' and 'lack of co-operation from middle managers' Factor 5, clubbed all the items under the constructs 'difficulty in sustaining workers' participation' and 'lack of support from union' Looking at all the items included in the two constructs, it was found that all the items ultimately measure the difficulty in sustaining involvement of the workers to the QMPs

4.10.3 Reliability of Scale

Cronbach's alpha is a widely accepted measure of reliability Typically a scale is said to be reliable if value of alpha is 0.6 or higher [Ahire, 1996] The reliability test for the scales were conducted using SPSS - X Release 3.0 for HP-UNIX To ensure Cronbach's alpha for the construct 'resource scarcity for implementation of project' above 0.6, the item 9 was eliminated from the construct Table 4.3 presents the Cronbach's alpha for the constructs as calculated

Table 4.3 Reliability of the Constructs

Constructs for Problems Related to QMPs Implementation	Cronbach's alpha
1 Centralised decision making in the enabling structure	0.61
2 Complexity in administration of QMP related projects	0.76
3 Resource scarcity for implementation of projects	0.76
4 Lack of co-operation from middle management	0.80
5 Difficulty in sustaining workers involvement	0.83

4.11 Choice of Statistical Procedure

The final objective of the research was to see how the problems of implementation are affected by various contextual factors All the contextual factors chosen for this study were classificatory type So the effect of the factors could be examined by dividing the responses into groups according to the contextual variables and observing whether the responses in the groups are significantly different or not For the purpose of statistical

analysis both parametric as well as non parametric techniques are available. When alternative techniques are available it is necessary to employ some rationale for choosing the techniques [Siegel, 1958]. The considerations for the choice of a statistical test are -power of the test, manner in which the samples are drawn, the kind of measurement or scaling which was employed for measuring the variables. A parametric statistical test is most powerful when all the assumptions of the statistical model are met. F-test and t- test are widely used parametric statistical analysis methods. Both tests assume that the observation or scores in a sample should come from a normally distributed population. To avoid any assumption of normality in the sample, nonparametric tests were used in this research. For testing the significant differences among k independent samples both extension of median test as well as K-W test can be used. When the data are such that either test might be used, K-W test is found to be more efficient because it uses more of the information in the observations. It converts the scores into ranks, whereas the extension of the median test converts them simply to either plus or minuses. Thus the K-W test preserves the magnitude of the scores more fully than does the extension of the median test. For this reason it is more sensitive to differences among the k samples of scores. The K-W test seems to be the most efficient of the non parametric tests for k independent samples (Siegel, 1956). Therefore the K-W test is used in our analysis to see the difference among the groups. Other than this, mean scores for the problem variables are obtained to see the extent of the problems in different groups as well as in the organisations as a whole. A summary of the procedure involved in the K-W test is described below,

- All observations are ranked for k groups in a single series, ranks are assigned from 1 to N
- Value R (the sum of ranks) for each of K groups is calculated
- Statistics H is computed using the following equation

$$H = \frac{12}{N(N+1)} \sum \frac{R^2}{n} - 3(N+1) \quad \text{Eq 4.11.1}$$

Where,

N = Total number of ranks,

n = The number of ranks in a group,

R = The sum of the ranks in any column,

H = Statistics distributed as Chi square

- If the probability associated with the observed value of H is equal to or less than the level of significance, H_0 is rejected in favour of H_1

To see the significant differences between two independent groups “Mann-Whitney U test” was used. This is the one of the most powerful of the non parametric tests, and it is a most useful alternatives to the parametric t test when assumptions of t test are not met (Siegel, 1956). For fairly large samples sizes n_1 and n_2 , the value of U (test statistics) is determined by the following equations

$$U = n_1 n_2 + \frac{n_1(n_1 + 1)}{2} - R_1 \quad \text{Eq 4 11 2}$$

$$U = n_1 n_2 + \frac{n_2(n_2 + 1)}{2} - R_2 \quad \text{Eq 4 11 3}$$

Where, R_1 = sum of the ranks assigned to group whose sample size is n_1 , and

R_2 = sum of the ranks assigned to group whose sample size is n_2

For large samples (n_2 larger than 20) the sampling distribution of U rapidly approaches the normal distribution, with

$$\text{Mean} = \mu_U = \frac{n_1 n_2}{2} \quad \text{Eq 4 11 4}$$

$$\text{and, Standard Deviation} = \sigma_U = \sqrt{\frac{(n_1)(n_2)(n_1 + n_2 + 1)}{12}} \quad \text{Eq 4 11 5}$$

That is, when $n_2 > 20$ we may determine the significance of an observed value U by,

$$z = \frac{U - \mu_U}{\sigma_U} = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\frac{(n_1)(n_2)(n_1 + n_2 + 1)}{12}}} \quad \text{Eq 4 11 6}$$

which is practically normally distributed with zero mean and unit variance(Siegel, 1956) The sign of z depends on whether U or $U - (U \approx n_1 n_2 - U)$ is used, but the value does not

All tests were performed with SPSS 7.5 for Windows using a significance level of 0.05 In the next chapter a detail report on the Analysis of data is presented

ANALYSIS OF DATA

5.1 Sample Analysis

Responses were collected from 17 organisations both from manufacturing as well as process industry. Out of 14 organisations solicited to participate in the survey, from Kanpur, Lucknow & Allahabad, 2 organisations could not finally give slot to the researcher due to their internal problems. Only four organisations, out of the 25 organisations to which questionnaires were sent through mail, returned their responses. Organisations that participated in the survey started their QM activities at least two years back and either have an ISO 9000 certificate or are in the process of getting the certificate. The employee strength of the smallest plant was 150 and the largest was 8250. There is also a wide variation in age of these organisations from 4 years to 57 years. Four of the organisations have undergone restructuring to make the organisational structure flatter with subsequent reduction in the number of positions from CEO to workers level. Five of the organisations created new QM department to monitor all quality management activities or reorganised the QA department to take extra responsibilities of Quality Management. Two of the organisations do not have union and nine of the rest had union leaders in the committees and teams of the enabling structure. Six of the organisations reported that they give financial benefits (direct or indirect) to workers for their participation in different QM related activities. Most interestingly, five of the organisations reported to make their QM activities compulsory for all the workers. Appendix 5.1 presents a summary of the respondent organisations.

A total of 82 responses were taken for analysis after carefully going through the content. As responses were collected only from managers involved in the QMPs, it was not possible to collect more than 10 samples from a single organisation. In all the organisations where responses were collected personally, effort was made to have responses from all the levels of management. Out of 82 responses, 24 were collected from top managers, 35 were from middle managers and rest 23 were from lower level.

managers Though effort was made to collect responses from different functional departments, it was found later that most of our respondents were from production or quality department

5.2 Overall Perception of Respondents

As mentioned earlier, the purpose of conducting this survey was not only to identify the problems of QMPs implementation but also to see the critical interrelationship that exists between the problems and various contextual factors that can contribute towards the problems in any organisation implementing the QMPs Before drawing any demarcation between the problems with the external variables, it was felt necessary to observe the perception of the respondents as a whole on the problems of QMP implementation The overall means and standard deviation of 18 items intended to measure the five problem constructs were presented in table 5.2.1. Except items 10, 11, 12, 13 other items have a mean score above 3 (in a 5 point scale) or close to 3 All the items having a mean score above 3, indicate that majority of the respondents (more than 50%) agreed to the items and hence perceived the problems, intended to be measured by the statements, existed in their respective organisations Items 6, 7 and 19 have their mean close to 3 (2.95, 2.97 and 2.97), so the problems intended to be measured by the statements cannot be discarded straightway before further analysis The items 10, 11, 12 and 13 were related to middle managers' alienation from the programmes The mean score for these four items are considerably less than 3 But looking at the sensitivity of the statements, we felt that there might be some bias in the responses It was observed that out of 82 respondents 35 were from middle managers and the middle managers' perception may not reflect the actual picture Further analysis of this issue is presented in the section 5.3.1 and 5.4.4

Though the questionnaire initially made included 20 items, two of the items related to the autonomy given to workers in their workplace were eliminated This was done mainly because all of our respondents were managers involved in the QMPs and not a single response was collected from the workers involved in such programmes and any conclusion drawn on this issue, without taking the workers perception may be highly biased The remaining 18 items were intended to measure 6 problems as identified from

the secondary analysis of cases After testing questionnaire for validity and reliability we are left with 16 items to measure five problems The items under the problems 'difficulty in sustaining workers participation' and 'lack of union's support' were merged during the exploratory factor analysis and the new construct that included the items of both the previous constructs is represented as 'difficulty in sustaining workers' involvement in the QMPs'

TABLE 5 2 1 Overall mean and standard deviation of the items

ITEMS	MEAN	STD DEV
1 A decision taken in the steering committee is required to be approved by top management committee for QMPs prior to its implementation	3 33	1 1
2 Often suggestions coming from the QCs are sent to top management committee for its approval	3 73	98
3. Often the steering committees and top management committee for QMPs refer a decision to person or department outside these committees	3 13	1 08
4 Co-ordinating a project related to QMPs is always a problem when more than one department is involved	3 06	1 06
5 It is difficult for the cross functional teams involved in QMPs related projects to get support from people not involved in quality related activities	3 01	1 12
6 Mostly quality related projects are delayed due to problems in Co-ordinating the projects	2 95	1 07
7 Often quality related projects undertaken by the cross functional teams and by steering committees are delayed due to lack of resources	2 97	1 08
8 Quality related projects requiring high resources are very difficult to get approved from top management committee	3 13	1 01
9. Top managers often find it difficult to attend the quality related meetings and seminars regularly	3 02	1 2
10 Middle managers rarely extend their help to the teams working on quality related projects with necessary technical assistance they require	2 2	0 78
11 Middle managers rarely come for rescue when a team working on a quality related project faces trouble due to internal disputes among departments involved in the project	2 3	0 92

12 Middle managers rarely encourage the workers to take part in the group activities related to quality improvement	2 4	0 93
13 Middle managers do not attend the meetings and seminars related to quality regularly because of their hectic schedule	2 8	2 3
14 Workers often demand incentives for their participation in the quality related group activities	3 02	1 09
15 Participation of workers in the group activities decreases during the peak production days	3 25	1 12
16 Most of the union leaders do not attend the meetings related to quality regularly	3.23	1.19
17 Union leaders rarely encourage the workers to participate in the quality related group activities	2 97	1 06
18 Quality related activities are often stopped during labour problems	3 01	1 17

As mentioned earlier, all the 18 items were used to measure 5 problems confronted by managers during implementation of QMPs as identified in the first phase of our research with the help of secondary analysis of four case studies conducted in four Indian Organisations. The problems intended to be measured by the items along with the mean and standard deviation are presented in table 5.2.2.

The items 9 and 13 were removed from their respective problem constructs to ensure Cronbach's alpha for all the constructs above 0.6 as explained in the section 4.10.2. Except the construct, lack of co-operation from middle managers to the QMPs, other four problem constructs have mean above 3 (in a 5 point scale) indicating that majority of the respondents agreed with the statements included to measure the problems. This itself supports our findings in the first phase of research, that managers implementing the QMPs often face these problems. Our belief is further supported by the fact that all the respondents in our sample are managers directly involved in the process of the QMPs in their organisations. Their perceptions cannot be taken as judgement passed from outside, but these are realisation of the barriers through which the quality managers have to work while implementing the QMPs.

TABLE 5 2 2 Problem Constructs along with the items included, mean and standard deviation

Problem of QMPs Implementation	Items	Mean	Std Dev
1 Centralised Decision Making in the enabling structure	1, 2, 3	3 5305	8901
2 Complexity in administrating quality projects	4, 5, 6	3 0081	8873
3 Resource scarcity for implementation of projects	7, 8	3 0549	9526
4 Lack of co-operation from middle managers	10, 11, 12	2 3333	7426
5 Difficulty in sustaining workers' participation	14, 15, 16, 17, 18	3 1134	8614

5.3 Implementation Problems and Contextual Variables

It was mentioned in the first chapter that our objective of the study is not only to identify the problems confronted during implementation of QMPs but also to see the effect of various contextual factors on the problems (ref section 4 2) This section attempts mainly to identify the problems that are affected by a particular contextual variable

The problems of implementation of QMPs are tested for significance with respect to different contextual variables as identified in the section 4 2 Except the factor, industry sector- Manufacturing (Engineering), Manufacturing (Electrical / Electronics) & Process - all other contextual factors have shown some interrelationship with one or more of the problems

5.3.1 Level of Management

On the basis of level of management, the responses were divided into three groups - top managers, middle managers and the lower managers, in order to observe if the perception of the respondents on the problems were significantly different by their

position in the hierarchy of organisation The number of responses in the three groups are given in the Table 5 3 1 1

TABLE 5 3 1 1 Number of responses from the three levels of management

Management Level	Number of respondents, N
Top	24
Middle	35
Bottom	23

K-W test was performed to see if any of the problems were significantly different by respondents level of management in the organisations Only perception on 'lack of co-operation from middle management' was found to be significantly different in the three levels of management Table 5 3 1.2 presents the results of the K-W test for the significant problem and Table 5 3 1 3 presents the overall mean and standard deviation of the problem in the three level of management

TABLE 5 3 1 2 Results of K-W test for the problem significant by level of management

Problem	Level of Management	Mean Rank	H	d o f	Significance
Lack of co-operation from Middle Managers	Top	38.73	6.99	2	0.03
	Middle	36.39			
	Bottom	52.17			

TABLE 5 3 1 3 . Mean and Standard Deviation of the significant problem for the three level of management

Category	Top	Middle	Lower
Mean	2.2778	2.1619	2.6522
(Std Dev)	(.7201)	(.7203)	(.7281)

The test results indicate that the problem, lack of co-operation from middle managers to the QMPs, is perceived mostly by the lower managers than the other two group of managers.

A discussion on this issue is presented in the section 5.4 of this report

5.3.2 Age of Organisation

The responses were divided on the basis of age into two groups - new organisation and old organisation to see the significance of age on the implementation problems. The new organisations are those established within last 15 years. The number of responses belonging to the two groups are shown in Table 5.3.2.1

TABLE 5.3.2.1 Number responses from new and old organisation

Category	Number of respondents, N
New Organisation (< 15 years old)	22
Old Organisation (> 15 years old)	60

Mann-Whitney U test was performed to see the significant differences between the responses of the two groups. Two of the problems - 'complexity in administrating quality projects' and 'Lack of co-operation from middle managers' - emerged as significantly different by age of the organisations. The test results are given below in Table 5.3.2.2. Mean and standard deviation of the significant problems are presented in the tables 5.3.2.3 and 5.3.2.4

TABLE 5.3.2.2 Results of Mann Whitney test for problems significant by age of organisation

Problem	Age of Organisation	Mean Rank	Sum of Rank	U	Significance
Complexity in administrating quality projects	New	25.60	384.0	419.0	.004
	Old	45.00	3019.0		
Lack of co-operation from middle managers	New	30.17	452.5	332.5	.035
	Old	44.04	2950.5		

TABLE 5 3 2 3 Mean and Standard deviation of the significant problem, complexity in administrating quality projects in the two groups

Category	New	Old
Mean (Std Dev)	2 3778 (8807)	3 1493 (8314)

TABLE 5 3 2 4 Mean and Standard deviation of the significant problem, lack of co-operation from middle managers in the two groups

Category	New	Old
Mean (Std Dev)	1 9556 (6155)	2 4179 (7461)

The test results show that old organisations face the problems of ‘complexity in administrating quality projects’ as well as ‘Lack of co-operation from middle managers’ more often than the new organisations.

Both the issues are discussed in the section 5 4 2 and 5 4 4

5.3.3 Size of Organisation

Size of an organisation can be measured from different aspects

- Physical capacity of an organisation
- Employee strength
- Organisational output

The first aspect takes into consideration the amount of work an organisation can do, the second aspect is number of employees available to do organisation’s work and the last aspect deals with the organisation’s achievement in term of sales, volume of purchases, etc The most common measure is the number of employees

According to the number of employees responses were divided into two groups - ‘medium’ organisations and ‘large’ organisations The organisations having an employee strength of more than 1000 are placed in the large category and others having employee strength less than that are in the medium category However none of

our respondent organisations had employee strength below 100 Table 5 3 3 1 shows the number of responses in both the groups

TABLE 5 3 3 1 Number of responses from large and medium organisation

Size of organisation (Employee Strength)	Number of respondents, N
Medium Size (< 1000)	29
Large Size (>1000)	53

Mann Whitney U test was performed to see the significant differences in the responses between the two groups The problem 'difficulty in sustaining workers' involvement' emerged as significant by size of the organisation The test results are presented in the Table 5 3 3 2

TABLE 5 3 3 2 Test results of Mann Whitney U test for the problem significant by size of organisation

Problem	Size	Mean Rank	Sum of Rank	U	Significance
Difficulty in sustaining workers' participation	Medium	45.63	1049.56	2385.0	.000
	Large	27.92	1228.50		

TABLE 5 3 3 3 Mean and Standard deviation of the significant problem, difficulty in sustaining workers' involvement

Category	Medium	Large
Mean	3.6435	2.8364
(Std Dev)	(.7384)	(.7945)

The results show that problem of sustaining workers' involvement to QMPs is more in medium organisations than large organisations.

Further analysis of the problem is presented in the section 5 4 5 of this chapter

5.3.4 Age of QMPs

On the variable Age of QMPs, the responses were divided into two groups - responses from organisations where QMPs were started at least 5 years back and responses from organisations where QMPs are not older than 5 years. The responses in the two groups are shown in the table 5 3 4 1

TABLE 5 3 4 1 Number of responses in the two categories of QMP age

Age of QMPs (Years of functioning)	Number of respondents, N
New QMPs (< 5 years)	33
Old QMPs (> 5 years)	49

Mann Whitney U test was performed to test the significant differences between the two groups in terms of the problems of implementation. Two problems emerged as significantly different by age of the QMP as presented in Table 5 3 4 2 below

TABLE 5 3 4 2 Test statistics of Mann Whitney U test for problems significant by QMP age

Problem	Age of QMPs	Mean Rank	Sum of Rank	U	Significance
Centralised decision making in the enabling structure	New	50.38	1662.50	515.5	.003
	Old	35.52	1740.50		
Complexity in administrating quality projects	New	53.03	1750.00	428.0	.000
	Old	35.73	1653.00		

TABLE 5 3 4 3 Mean and Standard deviation of the significant problem, centralised decision making, in the old QMPs and New QMPs

Category	New QMPs	Old QMPs
Mean (Std. Dev)	3 8485 (7755)	3 3163 (9054)

TABLE 5 3 4 4 Mean and Standard deviation of the significant problem, complexity in administrating quality project, in the old QMPs and New QMPs

Category	New QMPs	Old QMPs
Mean (Std Dev)	3 4343 (7522)	2 7211 (8616)

Both the problems ‘centralised decision making’ and ‘complexity in administrating quality projects’ are more in the organisations where QMPs are relatively new.

A discussion on this issue is given in section 5 4 1 and 5 4 2

5.3.5 Union’s Involvement

The organisations were grouped into two categories on the basis of unions involvement in the QMPs Responses from organisations having union leaders in the steering committees and other committees in the enabling structure constituted one group and the responses from other organisations constituted the other group Table 5 3 5 1 shows the number of responses in each category

TABLE 5 3 5 1 Number of responses in the two categories

Union Involvement	Number of respondents, N
No	29
Yes	36

of each of the groups. The problem 'difficulty in sustaining workers involvement' emerged as the only problem which is significantly different by unions involvement. Test results are shown in the table 5.3.5.2.

TABLE 5.3.5.2 Test results of the Mann Whitney test for the significant problem

Problem	Union's Involvement	Mean Rank	Sum of Ranks	U	Significance
Difficulty in sustaining workers' involvement	No	445.93	1240.0	83.00	.001
	Yes	20.37	713.0		

TABLE 5.3.5.3 Mean and Standard deviation of the significant problem, difficulty in sustaining workers' involvement

Union's Involvement	NO	YES
Mean	3.8296	2.5429
(Std. Dev.)	(.6194)	(.5913)

Test results show that the problem of sustaining workers involvement to the QMPs is more when union leaders are not included in the enabling structure for implementation of QMPs.

A discussion on this issue is given on 5.4.5

5.3.6 Benefits Given to Workers

To test the significance of benefits given to workers on the problems of implementation, responses were divided into two categories- one from organisations where workers were given direct or indirect financial benefits for their participation in the quality related group activities and other from organisations where workers were not given such benefits. Table 5.3.6.1 shows the responses in the two groups.

TABLE 5 3 6 1 Number of responses in the two groups

Benefits Given	Number of respondents, N
No	58
Yes	24

Mann Whitney U test was performed to see the significant difference between the two groups. It was observed that the problem 'difficulty in sustaining workers' support' was significantly different by benefits given to workers. The test results are presented in the Table 5 3 6 2.

TABLE 5 3 6 2 Test statistics of Mann Whitney U test for the problem significant by benefits given

Problem	Benefits Given	Mean Rank	Sum of Ranks	U	Significance
Difficulty in sustaining workers' involvement	No	29.10	1513.00	135.0	.001
	Yes	51.00	765.00		

TABLE 5.3 6 3 Mean and Standard deviation of the significant problem, difficulty in sustaining workers' involvement

Benefits given	NO	YES
Difficulty in sustaining workers' involvement	2.8962 (.7846)	3.8667 (.6873)

Most interestingly, test results show that organisations giving benefits to the workers face more difficulty in sustaining workers support to the programmes as shown in the analysis.

Discussion on this issue is presented in section 5 4 5

5.3.7 Nature of Participation of Workers

To see the impact of compulsory participation of workers in QMPs on the implementation problems responses were divided into two groups on the basis of

nature of participation in the QMPs Responses from organisations where participation was compulsory were kept in one group and the responses from organisations where participation was voluntary were kept in the other Table 5 3 7 1 shows the responses under each category

TABLE 5 3 7 1 Number of responses from organisations with voluntary and compulsory participation

Nature of Participation	Number of respondents, N
Voluntary	64
Compulsory	18

The results of Mann Whitney U test performed on the data showed that the problem 'scarcity of resources for implementation of QMP related projects' is significantly different in the two groups Table 5 3 7 2 presents the results of the test

TABLE 5 3 7 2 Test statistics of Mann Whitney U test for the problem significant by nature of participation

Problems	Nature of Participation	Mean Rank	Sum of Ranks	U	Significance
Resource scarcity for implementation	voluntary	38 87	2375 00	168 5	039
	compulsory	23 72	326 00		

TABLE 5 3 7 3 Mean and Standard deviation of the significant problem

Participation	Voluntary	Compulsory
Mean	3 1484	2 4444
(Std Dev)	(9582)	(8819)

Test results show that the problem scarcity of resources for implementation of projects is less in the organisations where participation of workers is made compulsory.

5.3.8 Presence of a Functional Department for Quality Management

It was one of the major interest of this research to observe how the presence of a functional department with the sole responsibility to implement the QMPs affect the problems of implementation. To see this responses were divided into two group on the basis of the presence of a functional department for implementing QMPs in the organisation along with the enabling structure - one group consists responses from organisations with a functional department for QMPs and other with responses from organisations without such departments. Table 5 3 8 1 gives the number responses in the two groups.

TABLE 5 3 8 1 Number of responses in the two categories

Existence of a Functional Department for QMPs	Number of respondents,N
No	53
Yes	29

Mann Whitney U test was performed to see the difference between the responses in the two groups with respect to the two groups. The problems that emerged as significant by the presence of a functional department for QMPs is given in the Table 5 3 8 2 along with the test statistics.

TABLE 5 3 8 2 Test statistics of Mann Whitney U test for the significant problem

Problems	Existence of QM Dept.	Mean Rank	Sum of Ranks	U	Significance
Complexity in administrating QMP related projects	No	46.03	2439.5	528.5	.019
	Yes	33.22	963.5		
Lack of co-operation from middle managers	No	45.50	2411.5	556.5	.034
	Yes	34.19	991.5		
Difficulty in sustaining workers' involvement	No	38.86	1671.0	307.0	.006
	Yes	25.29	607.0		

TABLE 5 3 8 3 Mean and Standard deviation of the significant problem complexity in administrating quality projects

Existence of QM Dept	No	Yes
Mean (Std Dev)	3 1950 (7321)	2 6667 (1 0485)

TABLE 5 3 8 4 Mean and Standard deviation of the significant problem lack of co-operation from middle managers

Existence of QM Dept	No	Yes
Mean (Std Dev)	2 4403 (7302)	2 1379 (7374)

TABLE 5 3 8 5 Mean and Standard deviation of the significant problem difficulty in sustaining workers' involvement

Existence of QM Dept	No	Yes
Mean (Std Dev)	3 3302 (8782)	2 7250 (6898)

The test results show that three problems - complexity in administrating QMP related projects, lack co-operation from middle management and difficulty in sustaining workers support -are less in the organisations having a functional department for implementing the QMPs.

5.3.9 Content Analysis of the Open Ended Question

The questionnaire used in the survey included an open ended question to the respondents to write about their perception on the problems faced by their QMPs. The issues that emerged as most significant to many respondents are addressed here

5.3.9.1 Education of the workers and success of QM initiatives

The level of education of the shop floor workers in majority of Indian organisation is very less. A top level manager in a small organisation (KPP), involved in the QM activities of that organisation, stated that the major challenge to him is to educate the workers in his organisation. Since QMPs need workers to learn some basic tools so that they can solve quality related problems effectively and contribute to the success of the programmes. As an organisation established way back in 1972, most of the employees at the lower level are not educated and most of lower level managers are not technically proficient. Though the employees are experienced enough to handle the day to day operations of the plant, they show little efficiency in group activities. Training programmes are regularly conducted to train the workers and they show considerable enthusiasm in learning the concepts of QM, but reality is that when it comes to use the tools and techniques, they fail miserably. Even managers of the large organisations also addressed this problem during the survey. One manager of an organisation involved in the production of electrical power equipments told the researcher that suggestion coming from the workers often lack depth and most of their suggestions are not feasible. He attributes this to the low education level of the workers and their lack of technical competence.

Another manager of a new plant of a major automobile company reported the same problem in a different manner. He stated that one of the major reasons for which the group activities like Kaizen, Q C, SGA are not producing satisfactory results is that the level of knowledge of the employees recruited as skilled workers is very poor. Enormous effort is needed to make them technically competent and to bring them to the level where they can really contribute to the quality improvement projects. Another manager of the same organisation reiterated that "what this organisation needs at this junction of quality movement is a strong training programme and continuous counselling of the members involved in Kaizen and Q C activities". But the issue that is still not clear is whether the training programmes can really contribute towards improvement in employees' knowledge towards quality. One senior manager of an electronic parts manufacturing company believed that the training programme conducted in his organisation was really paying results. He claimed that the continuous

education programme for the employees in his organisation not only brought up quality of its products, it had reduced its cost of quality as well

The entire issue of employees' educational background is a debatable issue. Though the managers reported the poor educational background of workers as a major hurdle in getting result from the workers' involvement activities, it should not be forgotten that people who were not involved in such activities for a major part of their life and who were never given the opportunity to use their heads in their workplace before, cannot suddenly learn all the methods and techniques taught to them.

5.3.9.2 Voluntary Participation of Workers

The debate over the issue of voluntary participation of workers in the quality related activities never ends in Indian organisations. First of all this issue was addressed in the case of organisation B, where managers believe that only compulsory participation can become successful in Indian organisations. Organisation B runs their quality circles and other employee involvement activities as mandatory for all the workers, although quality literature advocates voluntary participation of workers in QCs and SGAs. The managers, in some organisations, who believe in the voluntary participation of workers sometimes even refuse to give benefits to the workers for participation. A top manager of a government organisation told researcher during interview that the members of a QC of his organisation asked for uniform when they went to represent the organisation in a national level competition. He was interested in giving them uniforms, but his fellow managers opposed this stating that giving such benefits may violate the philosophy of QC. In another organisation, a middle level manager expressed that he personally feels the need of benefits to the workers giving good performance in the group activities. The needs of Indian workers are somewhat different from those in other countries like Japan. So voluntary participation may become successful there. But in India, considering the financial status of the workers, some financial benefits may provide motivation to the workers to participate in the group activities. However the analysis of the problems do not support the argument. It was seen that organisations giving financial benefits face more difficulty in sustaining workers' support to the programmes. At the same it has also been observed that the

organisations where participation is compulsory for all workers, are also not successful in meeting their objective

5.3.9.3 The Need for Change in Mindset

Literature says that in the new paradigm of TQM, managers need to facilitate workers rather than commanding and controlling them. But this change in mindset is quite difficult for the Indian organisations. This was illustrated by one top manager of an organisation, who once single handedly guided the QC movement in his organisation. The QC movement in his organisation failed after few years not because of problems like difficulty in sustaining workers participation, it failed because of some managers skeptical attitude towards the programme. The QCs were doing very well in the organisation for quite some time. The Workers were participating regularly and were able to come out with some good suggestions which were implemented successfully. The problem emerged when the demand for production was very high in a particular month. The General Manager (Production) asked this manager to stop the QCs as he perceived that these activities were hampering production. The manager heading the QCs asked the workers to stop QC meetings until the peak production period gets over. The workers said that the activities were carried out only in leisure hour, so there was no need of stopping them. So the manager also decided that these activities would be continued but only in the leisure hours. The GM (Production) was not satisfied and requested the manager to stop the activities again at least for that month. The manager then decided to stop the activities of QC immediately. The QCs were stopped, but it could not be started again in the organisation. All the members of QCs resigned within the next two months.

This case shows a clash of ego between the managers in the changing paradigm. This is more prominent in Indian organisations where there is a long hierarchy of managers.

5.4 A Framework for Thinking About Problems of QMPs Implementation

The Analysis of the problems in the light of contextual variables has shown that the problems identified in this study are affected by both organisation context as well as

the approach of the management in implementing the programmes. In the following sections each of the 5 problems are discussed in the light of the significant contextual variables that affect the problem.

5.4.1 Centralised Decision Making in the Enabling Structure

The problem, centralised decision making in the enabling structure is significantly different by age of the QMPs. The problem is more prominent in the new QMPs than the old ones as shown by the test results in section 5.3. One major reason behind this problem is the bureaucratic style of decision making in the enabling structure. The steering committees and the other committees in the enabling structure have the drawback that they cannot take decisions autonomously. Often decisions taken in these committees are sent to top management committee for the final approval and sometimes to other functional departments as well. The committees' role in the whole implementation process is advisory or facilitatory in nature without any executive power. This limits the effectiveness of the enabling structure in facilitating the teams working for quality improvement projects. Further analysis of the individual items under centralised decision making reveals that though all the items have mean score significantly more in the new QMPs, the old QMPs are also not free from the problems. All the items under the construct have mean score above 3 (out of 5) for both new as well as old QMPs as shown in the table 5.4.1.1.

TABLE 5.4.1.1 Mean score for the individual items under 'centralised decision making in the enabling structure'

Items	New QMPs	Old QMPs
1. A decision taken in the steering committee is required to be approved by top management committee for QMPs prior to its implementation	3.81	3.00
2. Often suggestions coming from the QCs are sent to top management committee for its approval	3.88	3.63
3. Often the steering committees and top management committee for QMPs refer a decision to person or department outside these committees	3.24	3.06

The results show that individual score of the items under this problem is significantly lower in the old QMPs. This indicates that in the course of time the committee and teams get some autonomy to take decisions at the lower level of the enabling structure. Still they do not get sufficient executive power to take decisions independently or to approve the suggestions coming from bottom without referring to the top management, as suggested by the responses. The main drawback of this centralised decision making in the enabling structure, as perceived by us, is that the whole structure fails to support the bottom up activities efficiently as a result of slower decision making. One of the major objectives of the QMPs is to become customer focused both in terms of external customer as well as internal customer. If the teams and workers involved in the quality projects are considered as internal customer of the enabling structure, then it should be admitted that this structure fails to propagate this philosophy itself.

5.4.2 Complexity in Administrating Quality Projects

Complexity in administrating quality projects is significantly different by age of the organisation, age of the QMPs and the existence of a functional department to drive the QMPs. This problem was first brought into light by Krishnan et al [1993], but further investigation was not reported in the literature. Administrative complexity arises due to the nature of the quality projects. Quality projects are mostly cross functional in nature that need the support and assistance of more than one department as well as people not involved directly in these activities. The enabling structure that drives the QMPs, lack executive power and mostly it is consultative and advisory in nature. So it fails to exercise any control over any department or person, if it shows reluctance in providing the necessary help required by the teams working in these projects. In fact the whole enabling structure remains like added on to the original functional structure of the organisation and for successful implementation of the projects always need the top management to throw its weight through the departmental heads [Krishnan et al , 1993]

The test results show that the complexity in administrating the QMP related projects is more in old organisations than in the new ones. The functional departments in an old organisation are mostly familiar to working like an independent unit. On the other hand, the QMP related projects often need the involvement of different departments in their successful implementation. As Deming said the successful implementation of the quality projects needs 'breaking the barriers' among the departments. This itself is a herculean task in an old organisations where most of the employees work with the barriers of functional structure for most of their life. The individual items under this construct are presented in table 5 4 2 1. Each of the items have a score more than 3 in old organisation whereas it is significantly lower in the new organisations.

TABLE 5 4 2 1 Mean scores of the individual items under the construct 'complexity in administrating quality projects

Items	New	Old
4 Co-ordinating a project related to QMPs is always a problem when more than one department is involved	2.20	3.25
5 It is difficult for the cross functional teams involved in QMPs related projects to get support from people not involved in quality related activities	2.33	3.16
6 Mostly quality related projects are delayed due to problems in Co-ordinating the projects	2.60	3.02

The test results also reveal that the complexity of administrating quality projects is more in the organisations where the programmes are relatively new (introduced within last 5 years). A further analysis of the individual items shows that all the items under this construct have mean scores below 3 in the old QMP and above 3 in the new QMP, indicating that in the old QMPs, the cross functional projects can be co-ordinated more easily with the support of different departments involved. One reason may be that the facilitating bodies co-ordinating the projects become more competent with with QMPs getting older. But considering the limitations of the facilitating bodies in terms of executive power it is highly unlikely that their

competency in handling the project results in lesser difficulty of administration. Another reason may be that with the QMP becoming old in the organisations, it gets wide acceptance among the organisational members and administration of the projects become easier with the support of the departments involved in the projects. However, the point that should not be overlooked here is that only those programmes that succeed in getting acceptance in the organisations can survive for as long as five years or more. Organisation A's, BGC programmes, as mentioned in the secondary analysis, can be pointed out in this respect which was implemented when SGA's were not functioning properly. Table 5.4.2.2 presents the mean scores for the individual items under this construct, complexity in co-ordinating quality projects, for the old and new QMPs.

TABLE 5.4.2.2 Mean scores for the items under the construct complexity of administrating quality projects for both new QMPs and old QMPs

Items	New	Old
4 Co-ordinating a project related to QMPs is always a problem when more than one department is involved	3.42	2.81
5 It is difficult for the cross functional teams involved in QMPs related projects to get support from people not involved in quality related activities	3.39	2.75
6 Mostly quality related projects are delayed due to problems in Co-ordinating the projects	3.48	2.59

TABLE 5.4.2.3 Mean scores for the individual items under the construct complexity of administrating quality projects for organisations with a QM dept and without

Items	With QM Dept	Without QM Dept
4 Co-ordinating a project related to QMPs is always a problem when more than one department is involved	2.72	3.24
5 It is difficult for the cross functional teams involved in QMPs related projects to get support from people not involved in quality related activities	2.65	3.20
6 Mostly quality related projects are delayed due to problems in Co-ordinating the projects	2.62	3.13

Finally it was observed that the problem complexity of administrating quality projects is significantly different by the existence of a functional department to drive QMPs. The problem is reported to be significantly low by the respondents from organisations where QMPs are driven by a functional department. The department for driving QM initiatives generally acts as an interface between enabling structure and the functional structure of the organisation. In other words it establishes a link between the two structures which is otherwise absent. For other departments the QMP related activities become more like functional activities than something added on to them. Unlike the enabling structure, the QM department has a physical identity in the functional structure that makes it more efficient to exercise its power while administrating the quality related projects. Generally the functional department to drive QM initiatives reports directly to top management. All the individual items under this construct have mean score below 3 for organisations with QM department and vice-versa as shown in the table 5.4.2.3.

5.4.3 Resource scarcity for project implementation

Resource scarcity for project implementation is significantly different by nature of participation. The test results showed that the organisations making participation of employees compulsory face the problem of resource scarcity in implementation of projects less than other organisations. This problem indirectly reflects the top management's lack of commitment towards QMPs. Though the primary objective of management adopting such an approach is to sustain workers participation in the programmes, by making the participation compulsory management shows its commitment to the programmes. Management can take such a strong step only when it is fully dedicated to the programmes. Our observation that the organisations making QMPs compulsory for all the employees are more successful in providing sufficient resources to the teams for implementation of quality projects supports our argument. However, this issue is always debatable, since organisations adopting such an approach deviate from the basic philosophy of workers involvement programmes.

TABLE 5 4 3 1 Mean scores for items under the construct 'resource scarcity for implementing projects' for the two categories - voluntary and compulsory participation

Items	Voluntary Participation	Compulsory Participation
7 Often quality related projects undertaken by the cross functional teams and by steering committees are delayed due to lack of resources	3 77	3 14
8 Quality related projects requiring high resources are very difficult to get approved from top management committee	3 88	3 15

A further analysis of the individual items under the construct as shown in the table 5 4 3 1 indicates that the individual items in both the categories - voluntary and compulsory participation - have mean scores more than 3 although it is significantly higher in the category of voluntary participation. This indicates that majority of the respondents in the organisations where participation is compulsory also agreed to the items under this construct.

5.4.4 Lack of co-operation of middle managers

Lack of co-operation of middle managers is the only problem that did not emerge as very prominent in our analysis. As mentioned earlier, this problem is either submerged in the organisation or sensitive enough from the respondents' point of view to get unbiased response from them. Still, the analysis shows that lack of co-operation from middle managers is significantly different by level of management, age of the organisation, and the existence of a functional department to drive the QMPs.

The test results indicate that the problem 'lack of co-operation from middle managers' is perceived mostly by the lower managers than the other groups of managers. This is very natural in any organisation, because the lower management is mostly involved in guiding and co-ordinating the projects related to QMPs. They are the people, who suffer most from the inadequate co-operation of middle management during leading

and co-ordinating the cross functional projects Table 5 4 4 1 shows the mean of the individual items that constitute the construct for each of the level of management

TABLE 5 4 4 1 Mean scores for the items under the construct 'Lack of co-operation from middle managers' for the three levels of management

Items	Top	Middle	Lower
10 Middle managers rarely extend their help to the teams working on quality related projects with necessary technical assistance they require	2 21	2 11	2 35
11 Middle managers rarely come for rescue when a team working on a quality related project faces trouble due to internal disputes among departments involved in the project	2 38	2 03	2 83
12 Middle managers rarely encourage the workers to take part in the group activities related to quality improvement	2 25	2 34	2 78

Our analysis also shows that the co-operation of middle managers is more in the new organisations than the old organisations. The employee involvement activities conducted as a part of QMPs are more focused towards the lower level of employees. Quality projects involve people at the lower level where workers play a major role with the supervisors as the facilitators or team leaders. It rarely involves middle managers directly in the projects. The middle managers may look at the whole process as a challenge to their existing role of 'control and command'. So the support of the middle managers in an old organisation, where they have spent quite a few years as part of an authoritarian system, may be lukewarm. The individual items under this construct are presented in the table 5 4 4 2.

Again, analysis of the responses in the section 5 3 reported that middle managers co-operation to the programmes is more when the QM initiatives are driven by a functional department. The greatest advantage of having a functional department to drive quality initiatives is that it tries to reinforce the QM activities into organisation's functional activities. When QM activities are fully integrated with functional activities then there remains little possibility to look them as something added from

outside[Yearout,1996] Middle manager's more support to the QMP's in organisations where they are driven by a functional department may be because of this reason Table 5 4 4 3 presents the mean score for the individual items under the construct for the two group of responses - from organisations with functional QM department and from organisations without such department

TABLE 5 4 4 2 Mean scores of the items under the construct 'lack of co-operation from the middle managers for QMPs' for the two groups - old and new organisations

Items	New	Old
10 Middle managers rarely extend their help to the teams working on quality related projects with necessary technical assistance they require	1 8	2 29
11 Middle managers rarely come for rescue when a team working on a quality related project faces trouble due to internal disputes among departments involved in the project	2 2	3 04
12 Middle managers rarely encourage the workers to take part in the group activities related to quality improvement	1 87	2 56

TABLE 5 4 4 3 Mean scores of the items under the construct 'lack of co-operation from the middle managers for QMPs' for the two groups - organisations with functional dept for QMPs and organisations without such dept

Items	With QM Dept	Without QM Dept
10 Middle managers rarely extend their help to the teams working on quality related projects with necessary technical assistance they require	1 93	2 35
11 Middle managers rarely come for rescue when a team working on a quality related project faces trouble due to internal disputes among departments involved in the project	2 10	2 49
12 Middle managers rarely encourage the workers to take part in the group activities related to quality improvement	2 37	2 47

5.4.5 Difficulty in sustaining workers involvement in the QMPs

Difficulty in sustaining workers involvement in the QMPs is significantly different by the size of the organisation, involvement of union, benefits given to the workers and existence of a functional department for QMPs

The test results showed that the problem of sustaining workers' involvement to QMPs is more in medium sized organisations than large organisations. As literature says large organisations have better management and better policy towards union and workers, and can spend more resources towards implementation of the QMPs. This enables the large organisations to sustain workers involvement in the QMPs more easily than the medium sized organisations. Table 5 4 5 1 presents the mean of the individual items under the construct 'difficulty in sustaining workers' involvement' for the medium sized and large organisation.

TABLE 5 4 5 1 Mean scores of individual items of the construct 'difficulty in sustaining workers' involvement in QMPs' for the groups - medium and large organisation

Items	Medium	Large
14 Workers often demand incentives for their participation in the quality related group activities	3 41	2 81
15 Participation of workers in the group activities decreases during the peak production days	3 62	3 05
16 Most of the union leaders do not attend the meetings related to quality regularly	3 79	2 93
17 Union leaders rarely encourage the workers to participate in the quality related group activities	3 36	2 75
18 Quality related activities are often stopped during labour problems	3 70	2 65

Except for item 15, most of the respondents from the large organisations disagreed to the problems related to sustaining workers' involvement in QMPs whereas majority of respondents in medium sized organisations agreed to them. Workers demand for monetary benefits may be due to the workers' belief that the programmes are for the benefits of the management and not for their welfare. So when the workers need to participate in these activities in addition to their functional activities, they feel overburdened and hence they demand incentives for their participation. The interesting fact is that both groups have a fairly high mean for the item 15, decrease in participation of workers during peak production hours, although it is significantly higher in the medium sized organisations. The reason for higher mean for medium sized organisations may be because of these organisations need to focus on production more than the large organisations for its mere survival and hence during these periods the QCs kind of activities take a back seat. If this is true, the this problem can be attributed more to the managers' attitude than workers' interest. All the other items related to workers' involvement have fairly high mean in medium sized organisations than large organisations. As stated earlier, large organisations better management policy may be the chief reason for this.

Results also show that the problem of sustaining workers involvement to the QMPs is more when union leaders are not included in the enabling structure for implementation of QMPs. Analysis of individual items reveals that in the organisations, where union leaders were not involved in the different committees that constitute the enabling structure, all the items under the construct had mean value above 3 with the item 'Union leaders attendance in QMP related meetings and seminars' had a score 4.21. This indicates that if union is not taken as partner in the organisations' efforts towards implementing QMPs, the union support is difficult to achieve and hence sustaining workers involvement in these activities is also difficult. Literature says that union may become a facilitating factor as well as a hindering factor for any kind of change programme depending upon their involvement in the programmes. Table 5.4.5.2 presents the mean scores for the individual items in both the categories.

TABLE 5 4 5 2 Mean scores of the individual items under the construct for the two groups - organisations with union leaders in the enabling structure and without union leaders in the enabling structure

Items	No Involvement of Union	Union Involved
14 Workers often demand incentives for their participation in the quality related group activities	3 65	2 61
15 Participation of workers in the group activities decreases during the peak production days	3 62	2 63
16 Most of the union leaders do not attend the meetings related to quality regularly	4 21	2 55
17 Union leaders rarely encourage the workers to participate in the quality related group activities	3 62	2 41
18 Quality related activities are often stopped during labour problems	3 82	2 51

One interesting result of our analysis is that organisations giving benefits to the workers face more difficulty in sustaining workers involvement to the programmes. One explanation to this observation may be that the organisations giving financial benefits already have some problems with labour relationship and hence in the process of implementing the QMPs they try to get support by giving benefits, though it is not supported by literature of quality. This also shows that external motivations cannot succeed in sustaining workers participation in the programmes unless they are not motivated internally. Table 5 4 5 3 presents mean scores of the individual items under the construct for both the group.

TABLE 5 4 5 3 Mean scores of the individual items under the construct for the two groups - organisations giving financial benefits to workers for participation and organisations not doing so

Items	No Benefit Given	Benefits Given
14 Workers often demand incentives for their participation in the quality related group activities	2 91	3 29
15 Participation of workers in the group activities decreases during the peak production days	3 12	3 58
16 Most of the union leaders do not attend the meetings related to quality regularly	2 92	4 25
17 Union leaders rarely encourage the workers to participate in the quality related group activities	2 77	3 62
18 Quality related activities are often stopped during labour problems	2 82	3 50

Finally it has been observed that organisations where QMPs are driven by a separate functional department along with the enabling structure faces less difficulty in sustaining workers' support for the problems. The same of argument that has been discussed while explaining middle managers more co-operation to the QMPs in organisations where these activities are conducted by a functional quality department, can be offered again. Further analysis of the individual items under this construct is presented in the table 5 4 5 4 below

Looking into the individual items in table 5 4 5 4 it is observed that except one item (item 15), all other items have significantly lower mean score for organisations with a functional department for QMPs

TABLE 5 4 5 4 Mean score of the individual items of the construct ' difficulty in sustaining workers' support in the two groups - organisations with a functional dept for QM and organisations without such dept

Items	With QM Dept	Without QM Dept
14 Workers often demand incentives for their participation in the quality related group activities	2 72	3 19
15 Participation of workers in the group activities decreases during the peak production days	3 17	3 30
16 Most of the union leaders do not attend the meetings related to quality regularly	2 68	3 55
17 Union leaders rarely encourage the workers to participate in the quality related group activities	2 72	3 11
18 Quality related activities are often stopped during labour problems	2 52	3 27

The problem of lower involvement of workers in group activities during peak production period has almost same mean score above 3 in both the categories As discussed earlier, this problem depends not only on the workers attitude but also on the managers priority to the QMPs in the peak production periods Sustaining participation in such difficult situations will depend on how the QMP department, if exists, establishes its authority on other departments

This chapter attempted to explain the effect of the organisational context as well as approach of management towards implementing the QMPs, on the five major problems of implementation An overall picture of the problems and the significant contextual variables is presented in the appendix 5 2 The proceeding chapter presents a brief discussion on the findings of the whole study

APPENDIX 5.1 List of organisations surveyed along with their background information

Organisation	Age of Org.	Employee Strength	Industry Sector	Age of the QMPs	Nature of Participation	Union's Involvement	Existence of a QM Dept
Kanpur Plaspupack	26	350	Process	4	Compulsory	No	No
Industrial Electronics	13	850	Electronics	2	Voluntary	N A	Yes
Scooters India	26	1994	Engineering	16	Voluntary	Yes	Yes
Eveready	40	740	Engineering	10	voluntary	No	No
Ordnance Parachute Factory	57	2800	Garment	11	Voluntary	Yes	Yes
SMS Associates	27	150	Electronics	7	Voluntary	Yes	No
LML	26	7000	Engineering	2	Compulsory	N A	No
BHEL	26	6300	Engineering	18	Voluntary	Yes	Yes
Duncan Fertilizer	29	1400	Process	2	Compulsory	Yes	No

APPENDIX 5.1 (Continued)

Organisation	Age of Org	Employee Strength	Industry Sector	Age of the QMPs	Nature of Participation	Union's Involvement	Existence of a QM Dept
Bajaj Auto	13	6123	Engineering	5	Voluntary	No	Yes
Goodlass Nerolac	70	2300	Process	6	Compulsory	No	No
TELCO	4	1400	Engineering	4	Voluntary	No	No
ABB	9	8250	Engineering	7	Compulsory	Yes	No
KrolaskOil Engines Pune	50	2400	Engineering	17	Voluntary	No	No
TI Cycles	49	5800	Engineering		Voluntary	Yes	Yes
Alstom	41	1000	Electronics	9	Voluntary	No	No
ITI	28	4500	Electronics	5	Voluntary	Yes	Yes

APPENDIX 5.2 The overall picture of the problems of QMPs implementation and the contextual variables affecting them

Problems	Level of management	Age of organisation	Size of organisation	Age of QMPs	Union involvement	Benefit given	Participation	Existence of QM dept
1 Centralised decision making in the enabling structure				more in new QMPs				
2 Complexity in administering quality projects		more in old		more in new QMPs			less when participation is compulsory	less when driven by a QM dept
3 Resource scarcity for implementation of projects								
4 Lack of co-operation from middle managers	mostly perceived by lower mgmt	more in old						less when driven by a QM dept
5 Difficulty in sustaining workers' involvement			less in large		less when union is involved	more when benefits are given		less when driven by a QM dept

CONCLUSIONS

6.1 Introduction

It has been observed throughout the study that organisations implementing Quality Management Programmes (QMPs) often confront hurdles in the process of managing the organisational change associated with such programmes. At times, the changes initiated even lead to tension within the organisation. This study not only highlighted the barriers within which the change agents - the managers involved in the implementation of the programmes - have to work, but also tried to explore the relationship of the problems with the organisational context as well as the approach of management in implementing such programmes.

Review of existing literature in the field of quality as well as organisational change provided us some vital issues that could be the source of major hindering factors during the implementation of QMPs. Keeping these issues in mind a secondary case analysis was performed on four cases dealing with implementation of QMPs. The secondary analysis enabled us to identify five major problems managers often confront during implementation of QMPs. In the next phase of the study, an instrument was developed for empirical investigation of the problems. The empirical investigation not only strengthened our understanding of the problems but also provided us an opportunity to explain the relationship of the problems with various contextual variables.

This chapter presents a brief discussion on the findings of this research along with its limitations as well as scope for further research.

6.2 Research Findings

The first phase of the study enabled us to identify five major problems often managers confront while implementing QMPs. The problems that we have identified in the first phase of research are as follows:

- 1 Centralized decision making in the enabling structure
- 2 Complexity in administration the quality projects
- 3 Resource scarcity for implementation of projects
- 4 Lack of cooperation from middle management
- 5 Difficulty in sustaining workers support to QMPs

A discussion on these problems is already presented in the section 4.5 of the this report

The empirical investigation of the five problems as identified in the first phase further revealed that extent of the problems are not invariably same in all the organisations implementing such programmes. The extent of problems vary with organisational context, or the approach of the management, or both

The major findings of the research are summarized below

1 A parallel enabling or supporting structure made to implement the QMPs has its inherent limitations in terms of (a) slower decision making and (b) difficulty it faces while administrating the cross functional projects

(a) Decision making in the enabling structure is highly centralised. The basic characteristics of the committees and the teams that constitute the enabling structure is that they are consultative or advisory in nature without any executive power. Any suggestion that comes from bottom up activities (like QC, Kaizen, SGA) or any decision taken in the facilitating committees has to go through the hierarchy of the enabling structure before it is finally approved for implementation. This makes the decision making process very slow and hence the whole structure made to support the QMPs fail to facilitate the workers involved in the programmes at the bottom efficiently. The study has shown that centralised decision making in the enabling structure is significantly more in the new QMPs than the old ones. But it has been observed that majority of the respondents in the old QMPs too perceived this as a significant problem, indicating that old QMPs are also not free from centralised decision making.

(b) The study has also shown that administration of the quality projects is difficult for the facilitating agencies in the enabling structure, especially in old organisations and at the initial stage of the programmes. Mostly quality projects are cross functional in nature involving different departments and requiring the support from people who are not directly involved in the programmes. Administration of such projects becomes highly complex for the facilitating agencies and often the projects are delayed. Our empirical study also shows that the presence of a functional department for the QM activities makes the administration of such projects significantly easier. Thus we can conclude that unless the enabling structure makes any dent in the main functional structure of the organisation through a functional department that acts as an interface, administration of the quality projects remains difficult for the facilitating agencies.

2 Management of the organisations implementing QMPs often fails to provide sufficient resources to carry out the projects. Projects involving high amount of resources are either delayed during approval or are not approved at all. Literature suggests that large organisations are more successful in providing resources for quality projects. But in our study we found this problem is invariably same in its extent both in the large organisations as well as in the medium size organisations. This indicates that this problem may be attributed to lack of commitment from the management than actual scarcity of resources in the organisations. One significant result provided by the empirical study is that, although this problem exists in all the organisations implementing QMPs, it is significantly less in the organisations where participation is made compulsory for all employees. So one can argue that the management in such organisations are more committed towards the programmes even if their approach is debatable as per the literature on participation.

3 Sustaining participation of workers as well as the union in the QMPs is a problem that varies in its extent under different organisational context as well as the approach of the management in implementing such programmes. It has been observed during the study that the large organisations are more successful in sustaining workers and union participation in the programmes. As mentioned in the literature, large organisations have better management policy towards the union and employees and this may be the

facilitating factor while involving employees in the QMPs. The empirical study has also shown that when union leaders are involved in the facilitating committees that constitute the enabling structure, organisations face less difficulty in sustaining workers' as well as union's support to the programmes. This finding supports what is suggested in the literature of organisational change that union should be made a partner in all change programmes like quality initiatives. Another significant result shown by our empirical investigation is that management cannot overcome the problem of sustaining workers' as well as union's support to the programmes by merely giving financial benefits to them or by making the participation compulsory.

Another issue, which is very relevant to workers involvement in the QMPs is the educational background of the employees. Educational background of the workers in an organization can become a major hurdle in getting encouraging result from the programmes that involve the workers, even if the organisation manages to sustain workers' participation in the programmes. QMPs need workers to have proper training in using statistical tools and techniques as well as proper understanding of the problems in their work place so that they can contribute towards continuous improvement in all the activities of the organisation through their suggestions and solutions. A number of respondents reported in the open ended question that majority of the workers in their organisations are not educated and the organisations need to put a lot of effort to bring them to a level where they can actively participate in the group activities and contribute towards their success. Some respondents reported that though workers participate in the training programmes enthusiastically, the ground reality is that the workers fail to use what they learn in the training programmes. So it can be easily perceived that poor educational background of the workers can become the major hurdle towards success of the QMPs, especially in Indian organisations.

However, this issue is still debatable. In majority of the Indian organisations, the workers start their career at a very early age and do not get any opportunity to use their head in their workplace throughout the career. If suddenly after implementation of QMPs, they are asked to take part in some activities, they are not used to, they cannot give expected performance.

4 The analysis of the cases in the first phase of the research enabled us to report that middle managers' support to the QM initiatives is very lukewarm and mostly because they are sidelined in the process of implementing QMPs. Our empirical investigation of this problem did not give us enough evidence in this direction. In fact, majority of the respondents did not perceive middle managers' cooperation as a problem in their organisations. Still it was observed in the empirical investigation that cooperation of the middle managers to the QMPs is more in the new organisations than in the old ones and significantly high when the programmes are driven by a functional department. Also it has been observed that lower management's perception on this problem is significantly higher than the rest. It can be speculated that there was a methodological problem in our approach to explore this problem. This problem is more sensitive than the others and hence it needs very close observation, which can only be done through case study method. Our belief that this problem exists in most of organisations is supported by the small case presented by one of the respondent as discussed in section 5.3.9.3. This case has shown that there is a clash of ego between the middle managers who are involved in the QMPs directly and those who are not involved. Some times, this clash can reach such an extent that all the efforts towards implementing the QMPs can be resisted by the middle managers who are not involved in the QMPs.

Though we do not have sufficient empirical evidence regarding middle managers lack of cooperation, still we can say, from the small case that they do not express their dissatisfaction directly by non cooperating with the programmes, so that they can be directly accused for that. But even if they express their dissatisfaction in a clandestine way, it is sufficient to act as a major resistance towards smooth implementation of the programmes.

6.3 Limitations of the Research

The major limitations of this research are

- The sample size of the respondent companies is very small to call it a study of Indian organisations implementing QMPs. Also the respondent companies are

- situated mostly in Uttar Pradesh So it does not represent a uniform mix of companies in India
- During the questionnaire survey, perceptions of the managers involved in the QMPs, including the supervisors, were taken So possibility of getting biased responses for certain problems cannot be denied Inclusion of the workers involved in the group activities related to the programmes could have given less biased response for those problems

6.4 Scope for Further Research

This study has focused on only two sectors of industry - manufacturing and process It can be extended by including manufacturing as well as service industry to make a comparative study so that the basic difference in the problems confronted by the change agents in both the sectors could be understood

A major limitation that restricts the generalisation of the findings of this study is the small sample size of the respondent organisations A further empirical study of the problems taking a comprehensive mix of organisations can lead towards generalisation of the issues addressed in this study

This study could not address the issue of middle managers' alienation from the QMPs properly Looking at the sensitivity of the issue, we believe that a case study focused on this issue can provide vital inputs for a deeper understanding of the problem Another significant issue that need further study is the impact of educational background of the employees on success of employee involvement activities Though our study did not focus on this issue, it emerged as a major concern for the managers guiding the employee involvement activities

REFERENCES

- 1 Agrawal, S K , Vrat, P & Karunes, S (1998) Total Quality Management Indian Experiences *International Journal of Industrial Engineering*, 5(3), 214 - 225
- 2 Ahire, S L , Golhar, D Y , & Waler, M A (1996) Development and Validation of TQM Implementation Constructs *Decision Sciences*, 27 (1), 23-55
- 3 Anand, K N (1996) Quality Strategy for the 1990s - the key is middle management *Total Quality Management*, 7(4), 411 - 420
- 4 Argyris, C (1998) Empowerment The Emperor's New Clothes *Harvard Business Review*, May - June, 98 - 107
- 5 Barnes, R , & Pike, J (1994) *TQM in Action*, London Chapman & Hall
- 6 Beatty, R W , Ulrich, D O (1991) Re-Engineering the Mature Organization *Organizational Dynamics*, Summer, 16 - 30
- 7 Beistle, T (1993) An Organisational Sea Change Total Quality Management in the Coast Guard *Kennedy School of Government Case Programme*, 2 -26
- 8 Benson, P G , Saraph, J V , & Schroeder, R G (1991) The Effects of Organisational Context on Quality Management An Empirical Investigation *Management Science*, 37(9), 1107 -1124
- 9 Bnnett, L M , & Kerr, M A (1996) A System Approach to the Implementation of Total Quality Management *Total Quality Management*, 7(6), 631 - 663
- 10 Bowen, D E , & Lawler III, E E (1992) Total Quality Orientad Human Resource Management *Organizational Dynamics*, Spring, 29- 41
- 11 Chandrasekhar, R (1998) The Importance of TQM Implementation *Business Today*, October, 7 - 21
- 12 Dey, B R (1998)Quality Circles An Indian Approach *Management and Labour Studies*, 23 (4)
- 13 Drucker, P F (1992) The New Society of Organisations *Harvard Business Review*, September - October, 95 - 104
- 14 Garvin, D A (1986) Quality Problems, Policies, and Attitudes in the U S And Japan An Exploratory Study *Academy of Management Journal*, 29 (4), 653 - 673
- 15 Hakim, C (1982) *Secondary Analysis for Social Research* London George Allen and Unnan

- 16 Jha, V (1998) Quality Circles Beyond Numbers A view from below *International Conference on Supply Chain Management for Global Competitiveness (OPSCON)98*
- 17 Jha, V (1997) Implementation of Quality Management Programmes as Planned Organisational Change Draft Cases for FPM Dissertation, IIM, Ahmedabad
- 18 Klein, J A (1984) Why supervisors resist employee involvement *Harvard Business Review*, September - October, 87 - 95
- 19 Knight, D , & McCabe, D (1997) ' How would you measure something like that?' Quality in a Retail Bank *Journal of Management Studies*, 34(3), 371 - 387
- 20 Kotter, J P (1990) What leaders really do *Harvard Business Review*, May - June, 103 -111
- 21 Kotter, J P , & Schlesinger, L A (1979) Choosing Strategies for Change *Harvard Business Review*, March - April, 106 - 113
- 22 Krishnan, R , Shan, A B , Grant, R M , & Baer, R (1993) In Search of Quality Improvement Problems of Design and Implementation *The Academy of Management Executive*, VII (4), 7 - 20
- 23 Lawler III, E E (1994) Total Quality Management and Employee Involvement Are they compatible ? *The Academy of Management Executive*, VIII (1), 68 - 76
- 24 Lee, S M , Luthans, F , & Hodgetts, R M (1996) Total Quality Management Implications for Central and Eastern Europe *Organizational Dynamics*, Spring , 42 -55
- 25 Nachmias, C , & Nachmias D (1985) Research Methods in the Social Sciences Australia Edward Arnold
- 26 Pathak, S (1997) Process of TQM Implementation A Case Study of INDAL - HIRAKUD Unpublished M Tech Thesis, IME, IIT, Kanpur
- 27 Quinn, R E , & Spritzer, G M (1997) The road to empowerment Seven Questions Every Leader Should Consider *Organizational Dynamics*, Autumn, 37 - 49
- 28 Rao, A (1996) *Total Quality Management A Cross Functional Perspective* New York John Wiley & Sons
- 29 Sayles, L R (1993) Doing things right The New Imperative for Middle Managers *Organizational Dynamics*, Spring, 5-14

- 30 Schonberger, R J (1993) Total Quality Management cuts a broad swath - Through Manufacturing and Beyond Organizational Dynamics, *Organisational Dynamic*, Spring, 5 - 14
- 31 Seigel, S (1956)*Nonparametric Statistics for the Behavioural Science* New York McGraw Hill Book Co Inc
- 32 Singh, V P (1997) Proces of TQM Implementation A Case Study of Maruty Udyog Unpublished M Tech Thesis, IME, IIT, Kanpur
- 33 Spitzer, R D (1993) TQM The Only Source of Sustainable Cometitive Advantage *Quality Progress*, June
- 34 Thompson, K R (1998) Confronting the Paradoxes in a Total Quality Environment *Organizational Dynamics*, Winter, 62 - 74
- 35 Walton, R E (1985) From control to commitment in the workplace *Harvard Business Review*, March - April, 77 - 84
- 36 Yearout, S L (1996) The Secrets of Improvement Driven Organizations *Quality Progress*, January, 51 - 56
- 37 Yin, R K (1984) *Case Study Research Design and Methods*, Sage Publications

APPENDIX 1

QUESTIONNAIRE

This questionnaire consists of three parts Part A addresses general information regarding your organisation and it's quality programmes Part B is your own assessment of some of the hurdles commonly faced by management during the implementation of the quality initiatives Part C attempts to assess the impact your company's quality programmes have made You may write additional comments in the space provided on the last page Please feel free to attach brochures or supporting documents regarding your company's Quality Management Programme if you find them relevant to the questions and mention that at the appropriate place

PART A

Instructions

Most of the questions in this part require simple YES / NO answers or simple information regarding your organisation

01 Name of the Company

02 Primary Product of the Company

03 Address of the Company

04 Phone No

Fax Number

E- Mail

05 Please specify your (1 1) Department

(1 2) Designation

1 1 Are you involved in any activity related to Quality Management Programmes of this Organization? **YES / NO**

If yes, Please indicate your involvement (putting tick marks)

- Member of Quality Council / Steering Committee
- Member of Quality Circle / Small Group Activity / Task Force
- Any other, (please mention) _____

1 2 Have you attended any training programme related to quality or quality management? **YES / NO**

If yes, please specify the subjects covered by the training programme(s) you have attended _____

2 1 When was your company incorporated ? Year _____

2 2 Present employee strength of your company? _____

2 3 In which category would you like to place your company? (Please tick the appropriate category)

a Manufacturing (Electronics) b Manufacturing (Electrical)

c Manufacturing (Engineering) d Process

e Any other category, not mentioned above _____

3 1 What was the reason behind introducing the Quality Management Programme in this company? (Please tick mark)

a Market or customer requirement b Collaborator's effort / requirement

c New CEO's initiative d Any other, _____

3 2 When was the Quality Management Programme started in your company ?
Year _____

3 3 What are the different programmes under way in your company as a part of the Quality Management Programme? Please specify the year of starting these programmes

YEAR

- 1 Quality Circle(QC)
- 2 Small Group Activity (SGA)
- 3 ISO 9000
- 4 Kaizen
- 5 Statistical Process Control (SPC)
- 6 House Keeping (HK)
- 7 Any Other, _____

3 4 Is participation of workers in the QMP related group activities compulsory?
YES/ NO

3 5 Does your organization give any direct or indirect financial benefits to the workers for participating in the QCs,SGAs ? YES / NO

3 6 Are union leaders in this organization also members of different quality related committees like steering committee, joint action committee or quality council?

YES / NO

If yes, please mention the approximate number of committees where union leaders are involved _____

3 7 1 Approximately how many committees are there in the whole structure supporting the QMPs from top management to the quality circle and the cross functional task forces? _____

3 7 2 Do the quality council, steering committees and other committees have the power to hold any person or department accountable for not participating in any activity related to QMPs ? YES / NO / CAN'T SAY

3 7 3 In your view, what is the approximate representation of different people in different committees related to QMPs ? (Please tick mark in the appropriate choice)

	ALMOST ALL	MOST OF THEM	FEW	VERY FEW	ALMOST NONE
DIRECTORS					
GMs					
SENIOR MANAGERS					
MANAGERS					
ENGINEERS					
SUPERVISORS					

4 1 (a) Have you seen any change in number of levels right from CEO to supervisors after implementation of the Quality Management Programmes ? YES / NO

If yes please specify the change _____

4 2(b) Have you seen any addition or removal of functional department after the implementation of the Quality Management Programmes? YES / NO

If yes specify the change _____

PART B

Instructions

In the next part there are some statements and you have five options. Tick the option you find most appropriate for your organisation. If you believe that the statement is very true tick the option "strongly agree", if you believe that it is somewhat true tick the option "agree", if you cannot say anything about the statement tick "undecided", if you believe that the statement is false most of the time tick "disagree", and if you feel that statement is always false tick "strongly disagree"

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
1.1 A decision taken in the steering committee is required to be approved by top management committee for QMP prior to its implementation					
1.2 Often suggestions coming from the quality circles are sent to top management committee for its approval					
1.3 Often steering committees and the top management committee refer a decision related to quality to person or department outside these committees					
2.1 Coordinating a project related to QMP is always a problem when more than one department is involved					
2.2 It is very difficult for the cross functional teams involved in QMP related projects to get support from people not involved in quality related activities					
2.3 Mostly quality related projects are delayed due to problems in coordinating projects					
3.1 Often quality related projects undertaken by cross functional teams and approved by steering committees are delayed due to lack					

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
3 2 Quality related projects requiring high resources are very difficult to get approved from top management committee					
4 2 Top managers often find it difficult to attend quality related meetings and seminars regularly due to their hectic schedule					
5 1 The middle managers generally help the teams working on quality related projects with necessary technical assistance they require					
5 2 Middle managers often come for rescue when a team working on a quality related project faces trouble due to internal disputes among the departments involved in the project					
5 3 Middle managers encourage workers to take part in group activities related to quality improvement					
5 4 Middle managers regularly attend the meetings and seminars related to quality despite their hectic schedule					
6 1 Workers in this organization often demand incentives for their participation in the quality related group activities					
6 2 Participation of workers in group activities decreases during the peak production days of season					
7 1 Workers in this organization can implement their suggestions without referring to top management for its approval					

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
7 2 Workers can fix any problem related to then work place without going to the departmental head for permission					
8 1 Most of the union leaders attend the meetings related to quality regularly					
8 2 Union leaders often encourage workers to participate in the quality related group activities					
8 3 Quality related group activities are not stopped even during labour problems					

PART C

Instruction Please give your rating in terms of the improvements that have taken place since the implementation of the QMPs in the following aspects in your organization in a scale from Very Low to Very High

	VERY LOW	LOW	MODE-RATE	HIGH	VERY HIGH
1 Quality of the product produced by your organization					
2 Relationship among <i>all</i> the employees in your organization					
3 Minimisation of waste during production					
4 Level of knowledge of the employees related to quality management activities					
5 Overall minimisation of cost					
6 Quality of materials supplied by the suppliers					
7 Level of customers satisfaction					

	VERY LOW	LOW	MODE- RATE	HIGH	VERY HIGH
8 Control over operational activities					
9 Relationship between union and management					
10 Participation of employees in decision making					
11 Communication of information between management and employees					

PLEASE GIVE YOUR COMMENTS AND SUGGESTIONS REGARDING THE QUALITY MANAGEMENT PROGRAMME OF YOUR ORGANIZATION

THANK YOU ONCE AGAIN FOR GIVING YOUR VALUABLE TIME IN FILLING THIS QUESTIONNAIRE

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Date Slip 127901

This book is to be returned on the
date last stamped.

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